

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 47, No. 11

NOVEMBER 1979

FEATURED IN THIS ISSUE:

- ★ DIAMOND JUBILEE OF THE S.A. DIVISION
- ★ SUNSPOTS, DX AND GETTING AMONGST IT
- ★ WHAT'S LEFT FOR THE NOVICE
- ★ REPEATER TIMER TIMER
- ★ 1979/80 ROSS HULL MEMORIAL CONTEST RULES

Electronics: the FUN WAY!

At last, there's a book that treats electronics as the really enjoyable hobby it is!

It's called 'Dick Smith's Fun Way Into Electronics' – and it's the ideal introduction to electronics for all ages – from 5 to 95.

Dick Smith's Fun Way uses a unique 'breadboard' wiring system that needs no soldering – so it is **safe** and each project has easy, step-by-step instructions that anyone can follow.

There are twenty exciting projects to build, from continuity checkers to radio transmitters – even a beer-powered radio receiver!

Electronics is fun. Have fun with Dick Smith's Fun Way into Electronics.

- **SAFE**
- **SIMPLE**
- **ECONOMICAL**
- **FUN!**
- **ONLY \$4.95**
- **NOW AVAILABLE**

SCHOOLS, COLLEGES, BOOK SHOPS, NEWSAGENTS, ETC: Ask about our incredible discounts for bulk orders (10 copies or more) of this book. You'll be pleasantly surprised!

And to help you get started:

Save money with 'Fun Way' kits! The components used in the Fun Way book are all common, easy-to-get types. But you can save by buying the kits from Dick Smith: We have assembled two kits which contain brand new, guaranteed components. You save up to 1/3 on the cost of individual components!

SAVE MONEY – BUY THE KIT!

DICK SMITH ELECTRONICS

NSW 125 York Street,
147 Hume Highway,
162 Pacific Highway,
30 Grosse Street,
263 Keira Street.

SYDNEY Phone 250 3377
CHULLORA Phone 442 8932
GORE HILL Phone 430 5311
PARRAMATTA Phone 083 1133

WILLONGONG Phone 28 3800

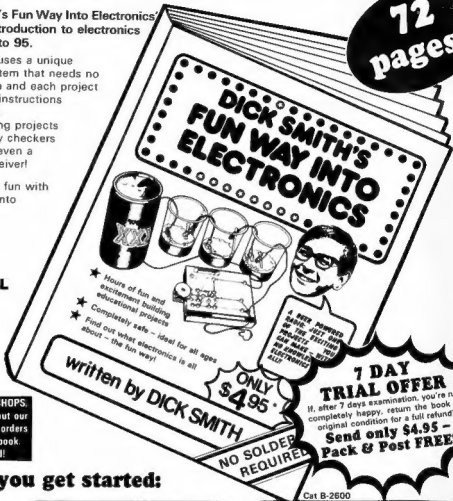
ACT 96-98 Gladstone Street,
VIC 395 Lennox Street,
805 Bridge Road,
QLD 166 Logan Road,
SA 203 Wright Street,
WA 414 Wilham Street,

TYNSWICK Phone 80 4944
MELBOURNE Phone 67 5834
RICHMOND Phone 428 1614
BURANDA Phone 281 6233
PHOENIX 212 1362
PERTH Phone 328 6944

EXCEPT WHERE NOTED, ALL ITEMS SHOWN IN STOCK AT PRICES GIVEN AT TIME OF GOING TO PRESS.

MAIL ORDER CENTRE: PO Box 321, NORTH RYDE NSW 2113. Ph 888 3200. PACK & POST EXTRA.

**72
pages!**



- ★ Hours of fun and excitement building educational projects
- ★ Completely safe – ideal for all ages about – the fun way!

written by **DICK SMITH**

ONLY \$4.95*

NO SOLDER REQUIRED

A BEER-POWERED RADIO JUST FROM THE RECIPES IN THIS BOOK CAN MAKE YOUR ELECTRONICS HELP

7 DAY TRIAL OFFER

If, after 7 days examination, you're not completely happy, return the book in original condition for a full refund!

Send only \$4.95 – Pack & Post FREE!

Cat B-2600

KIT 1: FOR PROJECTS 1 – 10

Build the first ten projects with these components – even includes the baseboard to assemble them on. You can make light flashers, Morse communicators, transistor chockers, continuity indicators, etc etc.

Contains: One particle board, 28 self tapping screws & washers, 1 7m wire, speaker, battery clip, 23 resistors, light dependent resistor, one diode, two LEDs, two transistors, 7 capacitors.

\$6.90

Cat K-2600

KIT 2: FOR PROJECTS 11 – 20

This kit contains slightly more specialised components which, with the components in kit 1, will enable you to make the last ten projects, including radio receivers & transmitters, audio amplifiers, etc.

Contains: 10 capacitors, one variable capacitor, one potentiometer, one resistor, one signal diode, one integrated circuit, one ferrite rod aerial, one crystal earphone, one audio transformer and 70cm hook-up wire.

\$7.50

Cat K-2610

bancard
welcome here

SHOPS OPEN 9AM TO 5.30PM
(Saturday: 9am till 12 noon)
BRISBANE: Half hour earlier.
ANY TERMS OFFERED ARE TO
APPROVED APPLICANTS ONLY
RE-SELLERS OF DICK SMITH
PRODUCTS IN MOST AREAS OF AUSTRALIA.





amateur radio

Published monthly as its official journal by the Wireless Institute of Australia, founded 1910.

NOVEMBER 1979

VOL. 47, No. 11

PRICE: 90 CENTS

Registered Office:
2/517 Toorak Road,
Toorak, Victoria, 3142.

EDITOR:
BRUCE BATHOLIS* VK3UV

ASSISTANT EDITORS:
RON COOK* VK3AFW
GIL BONES* VK3AJI

TECHNICAL EDITOR:
BILL RICE* VK3ABP

CONTRIBUTING EDITORS:
BOB ARNOLD VK3ZBB
MIKE BAZLEY VK6HD
ROD CHAMPNESS VK3UG
RON FISHER* VK3DM
ERIC JAMIESON VK3LP
PETER MILL VK3ZPP
LEN POYNTER* VK3GP
BILL VERRALL VK3WV
WALLY WATKINS VK2DEW

DRAFTING:
NEIL OSBORNE* VK3YEI

PHOTOGRAPHY:
REG GOUDGE —

BUSINESS MANAGER:
PETER DODD VK3GIF

ADVERTISING AND AD LIAISON:
MARK STEPHENSON* VK3NOY

*Member of Publications Committee

Enquiries and material to:
The Editor,
PO Box 2611W, GPO Melb., 3001

Copy is required by the first of each month. Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

Advertising: Material should be sent direct to P.O. Box 190, Toorak, Vic., 3142, by the 25th of the second month preceding publication. Phone: (03) 24 4652.—Hamads should be sent direct to P.O. Box 190, Toorak, Vic., 3142, by the 1st of the month preceding publication.

Trade Practices Act: It is impossible for us to ensure that advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are complied with strictly. Readers are reminded that, when buying, obtaining or receiving goods from overseas including goods listed in advertisements by overseas organisations in this Journal, Customs import duties and Sales Tax may be levied on the goods at the time of importation. These amounts, if any, are payable by the purchaser unless the terms of sale state otherwise and the seller has made specific provision to this effect in his quotation to the buyer or unless other prior arrangements are in force between the buyer and the seller.

Printers: EQUITY PRESS PTY. LTD.
50-52 Leighton Street, Collingwood, 3066
Tel.: 41 5054, 41 5055

CONTENTS

TECHNICAL

Novice Notes — Parasitics	30
Modifications to Solid State Video Switches	15
Repeater Timer Timer	14
Sunspots, DX and Getting Amongst It	10
Try This — Super Quad	30
What's Left for the Novice?	18

DEPARTMENTS

Amateur Satellites	34
Around the Trade	48
Awards Column	46
Book Review	45
Commercial Kinks	22
Contests — Ross Hull VHF Contest Rules	44
Divisional Notes	47
Hamads	48
Ionospheric Predictions	39
International News	38
Intruder Watch	39
Letters to the Editor	48
Obituary	50
QSP	4, 5, 17, 22, 24, 30, 47
Silent Keys	50
VHF-UHF — An Expanding World	37
WIA NEWS	6
You and DX	45

GENERAL

Amateur Radio Activities (State Award Conference)	18
Amateur Radio Mobile Society	23
Asia-Pacific/Australian Scout Jamboree	22
Canada-Australia TV Satellite Transmission Tests	21
Financially Speaking	23
More VK/CB Club Activities	33
Novice Notes — Having Trouble with Soviet QSLs?	30
Project ASERT Progress Report	39
Safety Expert's Story: Planning Saved Family from Fire	21
Summerland Radio Club Celebrates Lismore Centenary	36
The Diamond Jubilee of the South Australian Division of the Institute	8

ADVERTISERS' INDEX	50
--------------------	----

Cover Photo STILL GOING STRONG!

Eric Bierre VK2BEK at his amateur station, is in his 80th year and has been licensed since 1924. Eric describes his first rig as a receiver with regenerative detector and two audio stages.

The transmitter was a 210A valve with a Ford coil supplying plate voltage. This created ICW and also bad QRM locally.

He was told to stop using this until he could provide filtered DC for the plate supply. This was smartly done using a dynamotor run from a 6 V. battery and supplying 500V DC. He could then transmit for an hour and then charge the battery for the next 23 hours. The aerial was the last word in those days — an 8 inch cage and a counterpoise.

WIRELESS INSTITUTE OF AUSTRALIA

Federal President: Dr. D. A. Wardlaw VK3ADW

Federal Council:

VK1 Mr. R. G. Henderson VK1RH

VK2 Mr. T. I. Mills VK2ZTM

VK3 Mr. G. A. Williams VK3ZXW

VK4 Mr. A. R. F. McDonald VK4TE

VK5 Mr. C. J. Hurst VK5HI

VK6 Mr. N. R. Penfold VK6NE

VK7 Mr. R. K. Emmett VK7KK

Staff: Mr. P. B. Dodd VK3GIF, Secretary.

Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and

Mr. Mark Stephenson (AR advertising).

Executive Office: P.O. Box 130, Toorak, Vic. 3142.

2/517 Toorak Rd., Toorak, Ph. (03) 24 8552.

Divisional information: all broadcasts are on Sun-

days unless otherwise stated.

ACT:

President — Mr. A. Davis VK1DA

Secretary — Mr. F. Robertson-Mudie VK1NAV

Broadcasts — 3570 kHz and 2m Ch. 6 (or 7): 10.00Z.

NSW:

President — Mr. F. S. Parker VK2NFF

Secretary — Mr. T. I. Mills VK2ZTM

Broadcasts — 1625, 3595, 7145 kHz, 28.32, 52.1, 52.525, 144.1, 145.6, 146.4, Rptr. Ch. 3 — Gosford, Ch. 4 — Lismore, Ch. 5 — Wollongong, Ch. 8 — Dural 11.00h local (Evening 0930Z). Relays on 160, 90 and 10m, VHF and Repr. Ch. 3, Ch. 5, Ch. 8 and Hunter Branch, Mondays 0930Z on 3595 kHz, 10m, and Ch. 3 and 6. RTTY Sunday 0630Z 7045, 14090 kHz, Ch. 52, 0830Z 3645 kHz, Ch. 52.

VIC:

President — Mr. E. J. Bugbee VK3ZZN

Secretary — Mr. J. A. Adcock VK3ACA

Broadcasts — 1840, 3600, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (5) repeater: 10.30 local time.

Gen. Mtg. — 2nd Wed., 20.00.

QLD:

President — Mr. A. J. Aarsee VK4QA

Secretary — Mr. W. L. Gielis VK4ABG

Broadcasts — 1625, 3590, 7146, 14342, 21175, 28400,

kHz; 2m (Ch. 42, 48): 09.00 EST.

Gen. Mtg. — 3rd Friday.

SA:

President — Mr. I. J. Hunt VK5QX

Secretary — Mr. W. M. Wardrop VK5NWM

Broadcasts — 1620, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

Gen. Mtg. — 4th Tuesday, 19.30.

WA:

President — Mr. Ross Greenaway VK6DA

Secretary — Mr. Peter Savage VK6NCP

Broadcasts — 3560, 7075, 14100, 14175 kHz, 28.485, 52.290 MHz, 2 metres Ch. 2 Perth, Ch. 6 Wagin, Time 0130Z.

Gen. Mtg. — 3rd Tuesday.

TAS:

President — Mr. I. Nicholls VK7ZZ

Secretary — Mr. P. Blaise VK7ZPB

Broadcasts — 7120 (AM) kHz with relays on 2m Ch. 2 (5), Ch. 8 (N), Ch. 3 (NW), 09.30 EST.

NT:

President — Dick Klose VK8ZDK

Vice-Pres. — Barry Burns VK8BI

Secretary — Graeme Challinor VK8GG

Broadcasts — Relay of VK5WI on 3.55 MHz and on 148.5 MHz at 2300Z. Slow more transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal Information:

VK1 — P.O. Box 46, Canberra, 2600.

VK2 — 14 Atholton St., Crown St., 2065 (Ph. (02)

43 5795 Tues & Thurs (10.00-14.00h).

P.O. Box 123, St. Leonards, NSW 2065.

VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Weekdays 10.00-15.00h).

VK4 — G.P.O. Box 638, Brisbane, 4001.

VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at

West Thebarton Rd., Thebarton.

VK6 — G.P.O. Box N1002, Perth, 6001.

VK7 — P.O. Box 1010, Launceston, 7250.

VK8 — (incl. with VK5), Darwin Air Club, P.O. Box

37317, Winnellie, N.T., 5789.

Slow more transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 46, Canberra, A.C.T. 2600.

VK2 — QSL Bureau, C/- Hunter Branch, P.O. Taralba, N.S.W. 2284.

VK3 — Inwards QSL Bureau, Mr. E. Trablecock, 340

Gillies Street, Thornbury, Vic. 3071.

VK3 — Outwards QSL Bureau, Mr. R. A. Frowse,

83 Brewer Road, Benleigh, Vic. 3204.

VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001.

VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 203

Belair Road, Torrens Park, S.A. 5082.

VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O.

Box F319, Perth, W.A. 5001.

VK7 — QSL Bureau, G.P.O. Box 371D, Hobart,

Tas. 7001.

VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418,

Darwin, N.T. 5784.

VK8, e — Federal QSL Bureau, 23 Landale Street,

Box Hill, Vic. 3128.

HISTORY

your legacy

DEMOCRACY

your privilege

CONTRIBUTIONS

your responsibility

QSP —

It is fitting that this QSP should come from South Australia, as it was on 5th November, 1919, that the first General Meeting of the South Australian Division, at which a constitution was adopted and office bearers elected, was held. Thus this month the VK5 Division celebrates its Diamond Jubilee. The first meeting at which interim office bearers were appointed had been held earlier in the year on 10th September, 1919.

Ever since, the members of the Division have had their rights protected by the constitution and have been able to have their say by voting on any and all matters affecting the running and representation of their organisation. I believe that all of the Divisions within the Wireless Institute of Australia have followed a similar path.

In later years with the formation of the Federal organisation the same democratic process has been followed right through from Divisional level to the Federal level and the policy making Federal Conventions.

It has often been said that for a group of people who are supposed to be communicators we are sometimes not very good at communicating.

To communicate anything, several functions must be carried out. Firstly, develop an idea. Secondly, find someone to transmit the idea to. Thirdly, the person receiving MUST LISTEN.

By listening one can become informed, but herein lies the crux of the matter. If the original idea or statement is incorrect in fact, the person listening will therefore become ill-informed. As in radio if the receiver adds distortion the true and correct message is not received. If the original idea is not quite right the person listening can act as a HISTORY, your legacy; Democracy, your privilege, CONTRIBUTIONS, your responsibility filter, provide feedback, either positive or negative, make a conversion process etc., thus improving the "signal" which may then be transmitted far and wide.

(continued page 5)

WIA (FEDERAL) DIRECTORY

MEMBERS OF EXECUTIVE

Dr. D. A. Wardlaw VK3ADW, Federal President.
Mr. P. A. Wolfenden VK3ZPA, Exec. Vice-Chairman.
Mr. K. C. Seddon VK3ACS, Member.
Mr. H. L. Hepburn VK3AFQ, Member.
Lt-Col. J. McL. Bennett VK3ZA, Member.
Mr. C. D. H. Scott VK3BNG, Hon. Treas.
Secretary: Peter B. Dodd VK3CIF.

**IARU LIAISON OFFICER AND
IMMEDIATE PAST FEDERAL PRESIDENT**
Mr. M. J. Owen VK3KI.

INTRUDER WATCH CO-ORDINATOR
Mr. A. W. H. Chandler VK3LD.

FEDERAL REPEATER SUB-COMMITTEE
Mr. K. C. Seddon VK3ACS, Chairman.
Mr. J. L. Martin VK3ZJC.
Mr. P. B. Mill VK3ZPP.

**MANAGING EDITOR AND
CHAIRMAN OF PUBLICATIONS COMMITTEE**
Mr. B. Baileys VK3UV.

FEDERAL BROADCAST TAPE CO-ORDINATORS:
Mr. R. Fisher VK3OM.
Mr. W. Roper VK3ARZ.

FEDERAL EDUCATION CO-ORDINATOR
Mr. G. F. Scott VK3ZR.

FEDERAL HISTORIAN
Mr. G. M. Hull VK3ZS.

FEDERAL CONTESTS MANAGER
Mr. W. A. Watkins VK2DEW.

FEDERAL AWARDS MANAGER
Mr. W. D. Verrall VK5WV.

FEDERAL VHF/UHF ADVISORY COMMITTEE
Mr. K. G. Malcolm VK3ZYK, Chairman.
Mr. P. A. Wolfenden VK3ZPA.
Mr. I. W. Cowan VK3BGH.
Mr. L. James VK3BKF.
Mr. J. L. Martin VK3ZJC.
Mr. K. L. Phillips VK3AIQ.
Mr. W. M. Rice VK3ABP.

FEDERAL RTTY COMMITTEE
Mr. H. P. Mulligan VK2BHH, Chairman.
Mr. J. J. Lupton VK2BVJ.
Mr. R. E. Taylor VK2AOE.

PROJECT ASERT COMMITTEE
Mr. R. C. Arnold VK3ZBB, Chairman.
Mr. P. A. Wolfenden, VK3ZPA/NIB.
Mr. K. G. McCracken VK2CAK.
Mr. L. James VK3BKF.
Mr. G. C. Brown VK3YGB.

AMATEUR SATELLITES
Mr. R. C. Arnold VK3ZBB.

FEDERAL WICEN CO-ORDINATOR
Mr. R. G. Henderson VK1RH.
VK/2L/O CONTEST MANAGER (VK)
Mr. N. R. Penfold VK6NE.

FEDERAL VIDEO TAPE CO-ORDINATOR
Mr. J. F. Ingham VK3KG.

FEDERAL COUNCILLORS
Please see main Directory.
ALTERNATE FEDERAL COUNCILLORS
VK1—Mr. A. Davis VK1DA.
VK2—Mr. P. B. Card VK2ZBK.
VK3—Mr. A. R. Noble VK3BHM.
VK4—Mr. D. T. Leutle VK4DT.
VK5—Mr. C. J. Hurst VK5HI.
VK6—Mr. P. J. Savage VK6NCP.
VK7—Mr. P. D. Frith VK7PF.

AT LAST!

**THE TYPE 610 BRITISH
POST OFFICE designed
MORSE CODE KEY**



There has never been a better designed Morse Code Key — SOLID, ROBUST and BEAUTIFULLY BALANCED.

\$26.50 (Post Paid)

"LEARNING THE MORSE CODE" — Cassette Album Training Course. You will progress rapidly using this modern training system.

PRICE \$20 (Per Album of 3 Cassettes)

WILLIAM WILLIS & Co. Pty. Ltd.
77 CANTERBURY ROAD, CANTERBURY,
VIC. 3128
PHONE: 836 0707

When you think about it, isn't this the mechanism of the democratic process the WIA follows? By debate at meetings, suggestions, action of committees, we develop a line of approach hopefully producing in the final analysis a result for the betterment of amateur radio and your organisation.

One thing you do know and that is "that if there is no input you will get no output."

One of the most important aspects of these functions as regards the WIA, is the fact that, like it or not, for member and non-member alike, the Institute is recognised by the authorities as the only official spokesman for amateur radio in this country.

So, let's all be transmitters and provide an input. Also act as receivers and become informed. Filter out un-informed information, don't take notice of divisive and distorted views. Distortion is one thing to be well rid of. Use the democratic process, proven by tradition and time, which is open to you. It is in your own interests to support your hobby and your organisation in this way.

The oldest amateur radio organisation in the world with proud traditions can only retain its pride and effectiveness through YOU, the member. Make sure that you can be proud of your contribution to YOUR hobby and YOUR organisation. Contribution is YOUR responsibility.

Help provide a united front for amateur radio.

To use an old and traditional cliché: "In unity lies strength".

IAN HUNT VK5QX,
Divisional President of SA Division.

QSP

EXHIBITION OF APPARATUS

According to a publicly release the Fair Association of Vincenza in collaboration with the ARI (Italian Association of Radio Amateurs) is arranging an exhibition, including components and amateur radio equipment, in Vincenza from 8th to 10th December. The exhibits also include micro-wave processor systems and various industrial equipment and will provide a meeting place for everybody to exchange ideas, comparisons and experiences.

IYC

1979, the International Year of the Child. A brochure asks "What can you do?", and then goes on to list examples of what can be done. Most of these look rather familiar in the context of amateur radio activities year in and year out as an ongoing commitment. One has only to think of dedicated amateurs instructing the young in Youth Radio schemes these many years, JOTA and other activities involving amateurs locally, not forgetting the international aspects of this first class leisure activities.

HAM RADIO SUPPLIERS

133 ELIZABETH STREET, MELBOURNE. PHONE: 67 7229

WE STOCK:—

Radio Tubes — Condensers — Crow — Switches — Resistors — Speaker Wire — 50 x 72 CX Cable — ex Army Test Gear — CB Power Supply — Disposal Receiver Valves — Radio Chassis — Pots — TV Parts — ex Army Tx and Receivers — Microphones — Speakers — Tuners — Meters — Transformers — PSU Kits — Mike Leads — Speaker Cloth — Solder Eater — Plugs — Sockets — Log Books — Recording Tape — Tape Recorders — Walkie Talkies — Multimeters — Diodes — Electronic Components

and many other items — too numerous to list here.

HAM RADIO DISPOSALS STORE

104 HIGGETT STREET, RICHMOND
TELEPHONE 428 8136

WIANEWS

TV CHANNEL 5A

The following is the text of a letter dated 20th September received by the Federal President from Mr. A. A. Staley, Minister for Post and Telecommunications —

"On the 27 March 1979 you forwarded to me a copy of your Report on Increasing Usage of Television Channel 5A. The Secretary of your Institute (Mr. P. B. Dodd) has also sent me copies of attachments to the report.

I have already advised you that I agreed that there should be no further allocations of Channel 5A until a detailed report is prepared following WARC 79. The question of allocations already made, but where the stations concerned are not yet in service, is still being studied.

I have read your report with interest and it is being carefully studied at present by my Department. However, the questions raised are complex and it will be some time before detailed comments can be produced. You will realise the extreme difficulties involved, both from a financial and timetable viewpoint, in changing the channel of projects that are already well advanced. It is to be expected therefore that a significant number of 5A stations will still come into operation over the next 12-18 months."

The final paragraph is considered to be of sufficient importance to require clarification, particularly relating to the meaning of "5A stations".

Readers may wish to refer to the Press Release published in June AR.

HANDBOOK

Since publication of the statement on page 31 of September AR a copy of the latest draft of the Handbook has now arrived. This could in fact be the proof for the final printed copy.

The new draft includes a great number of appendices which incorporate the syllabus for the AOCIP and Novice theory examinations, 50 sample multi-choice questions for each, 30 sample multi-choice questions on Section "K" (Regulations), the contents of various forms such as the RB125 and RB25A, an update of the pamphlet about good radio and TV reception and other data.

Readers are reminded that the details in any such Handbook cannot conflict with the WT Regulations. The Handbook is merely an interpretation of these Regulations.

The chapter on definitions has been expanded. In general, any new definitions follow the broad ITU equivalents — such as "harmful interference", "occupied bandwidth", "spurious emissions" — whilst others include "operator", "repeater/translator station", "session", "simplex operation", "slow scan television", "television", "third party", "beacon station", "club station", etc. A few definitions have been expanded or clarified, as for example —

"'Mobile station' means a station in the amateur service that is installed in a vehicle, aircraft, ship or any other means of transport and is normally used while the vehicle, aircraft, ship or any other means of transport is in motion, or during halts at unspecified locations. A station carried by a pedestrian is included in the above definition, but see also 42(b) below."
see also 4.2 (b) below."

It is manifestly impossible to isolate all the various differences between the existing and the proposed Handbooks in the space available here. The "statement" referred to covers many of the main differences.

Identification has been increased from 5 to 10 minutes. RTTY (and similar) stations will have to identify in the mode in use as

what's new scalar?

AMATEUR H.F. SERIES MOBILE RESONATORS

SC10, 15, 20, 40, 80R:
INDIVIDUAL
RESONATORS
FOR SINGLE, DUO
& TRI-BAND
OPERATION

SC1015R:
TRI-BAND
ATTACHMENT



CONTACT YOUR HAM GEAR RETAILER
OR POST THIS COUPON NOW!

★ PLEASE SEND DETAILS ON YOUR
AMATEUR BAND ANTENNAS TO:

NAME:

ADDRESS:

STATE:

POSTCODE:



73's from SCALAR INDUSTRIES PTY. LTD.
20 Shelley Avenue, Kilsyth, Vic. 3137 (03) 725 9677
N.S.W.: 20 The Strand, Penhurst, 2222 (02) 570 1788
QLD.: 969 Ann St., Fortitude Valley, 4006 (07) 52 2594

well as CW or telephony. Details and parameters are set down for automatic radio telegraph systems, facsimile, repeaters, beacons, television and SSTV as well as duplex working, maritime mobile operations, aeronautical mobile and also emergency working. The operation of club stations has been more closely defined and details about reciprocal licensing have been spelt out in greater depth.

Paragraph 29 in the existing Handbook has been expanded as follows—

"4.2 As a general rule an amateur station licence authorises the operation of an amateur transmitting and receiving station:

- (a) at a fixed location detailed in the licence;
- (b) at any temporary premises or any temporary location, including a vehicle which is normally garaged at the fixed location detailed in the licence, for periods of up to four consecutive weeks in any one instance. Approval to operate from temporary locations for periods in excess of four weeks may be obtained on written application to the Superintendent, Regulatory and Licensing in the capital city of the State in which it is intended to establish the station . . ."

It seems obvious that the new Handbook does not come into operation until it has been published and distributed.

Much discussion has been held with the Department about highly specialised items which the WIA believes should not be subject to examination—one example is the repeater conditions.

REPEATERS

And on the subject of repeaters it is understood that the Depart-

ment has agreed in principle to the licensing of a 6 metre repeater on trial in VK6—please see AR for July, page 6.

EDUCATION MATERIAL

During discussions in Adelaide the Federal Education Co-ordinator initiated the production of various kinds of visual aids for training purposes. A number of Divisions have been asked to assist in this work.

MEETINGS

At the Executive meeting on 6th September a lengthy discussion was held on the question of the Federal dues for 1980. It had originally been hoped that at the 1979 Federal Convention these would remain unchanged for the fourth year in succession but from the latest data and inflationary trends prudence dictated that a small increase was essential if the budget is not to go into deficit. A modest increase of \$1.50 (from \$15.00 to \$16.50) on all non-concessionary members has been approved.

1979 CALL BOOK

Sales of the Call Book have been going well. To avoid disappointment members should order now before stocks run out.

WARC T9

WARC T9 has begun. The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from members—

LIST No. 7

VK3ABH	.....	\$20.00	VK5KJ	.....	10.00
VK2NDJ	.....	5.00	VK2APW	.....	5.00
VK5ZRL	.....	10.00	VK4QO	.....	20.00
VK3ADR	.....	50.00	VK3BT	.....	10.00
VK3AUC	.....	8.85			

TO COMPLEMENT OUR USUAL RANGE OF CRYSTALS

BRIGHT STAR CRYSTALS PTY. LTD.

35 EILEEN ROAD, CLAYTON, VIC., 3168
Phone: 546 5076 (Area Code 03)
Telex: AA 38004

CAN SUPPLY A RANGE OF —

- OSCILLATORS
- WIDE-BAND AMPLIFIERS
- TTL & CMOS DECADE COUNTERS
- ELECTRONIC CRYSTAL OVENS



INTERSTATE AGENTS:

Adelaide: ROGERS ELECTRONICS — Phone 42 6666
Brisbane: FRED HOE & SONS PTY. LTD — Phone 47 4311
Perth: WESTEST — Phone 337 6393
Hobart: DILMOND INSTRUMENTS — Phone 47 9077
All Mail to be addressed to: P.O. BOX 42, SPRINGVALE 3171

ANTENNA PARTS, KITS

V
K
3
A
S
C



V
K
3
A
S
C

QUAD HUB, \$44.20 plus Postage (3 kg) mass.

QUAD KIT, \$190.50, freight forward
Consisting of Hub: 12 ft. solid F/G
Spreaders: Aluminium Extenders.
Ferrules, Adaptors: 350 ft. 0.064 Hard
Drawn Copper wire.
Nylon line and insulators.

MOBILE ANTENNA PARTS, etc.

NEW BUSINESS ADDRESS:

J. VAILE

3 LESLIE COURT, BURWOOD
VIC. 3125. — PHONE 288 1047

THE DIAMOND JUBILEE OF THE SOUTH AUSTRALIAN DIVISION OF THE INSTITUTE

Ian Hunt VK5QX
8 Dexter Dr., Salisbury East 5109

The Wireless Institute of Australia holds the proud position of being the oldest amateur radio society in the world, having been formed before such other well known organisations such as the Radio Society of Great Britain and the American Radio Relay League.

I thought you may be interested to know a little about the formation of the South Australian Division of the Institute which this year celebrates its sixtieth year of operation.

Mr. C. E. Ames, who became the first secretary of the Division, fortunately had the foresight in his time to prepare an account entitled *How the South Australian Division of the Wireless Institute of Australia came to be formed*. This document, together with the original Minute Book of the Division, have luckily escaped the ravages of time and, still in fair condition, are held by the Divisional Historian, Maurice Philips VK5ZU. The Council of the Division are taking steps to ensure preservation of these documents for posterity.

Access to these documents therefore allows me to provide you with the following information, some of it taken directly from the account by Mr. Ames who, in the year 1914 as a licensed experimenter, held the call sign of XVG.

I now quote directly from that account:—

All pre-war radio experimenters will remember that simultaneously with the outbreak of war came notices that all wireless gear was to be dismantled, packed in cases and handed in to the nearest official Post Office. At the cessation of hostilities in 1919, notice was received that our apparatus would be returned to us on application to the postmaster at the office to which it had been delivered in 1914. The same notice made it clear that restrictions on the use of such apparatus still remained in force, and that a continuance of the prohibition against all private wireless experiments must be rigidly observed in accordance with the War Precaution Regulations.

This, with hints thrown out by the press, made it appear that we experimenters were going to have a hard fight to obtain anything like our pre-war freedom, and I began to realise that if we could organise the experimenters, and others interested in wireless development, into a solid body, that we would then be in a position to press our claims.

I well remember passing down a certain street in Mile End, one day on my way home from work, and seeing an aerial

which had been erected, and on making enquiries at the house found that it belonged to Mr. Malpas, with whom I had become acquainted in pre-war days as a wireless operator. I mentioned to Mr. Malpas my idea of forming a Wireless Institute in this State and he was very enthusiastic about it and encouraged me to go ahead with it. Mr. Malpas was the first person to whom I mentioned the idea of forming the Wireless Institute of South Australia.

I then got in touch with Mr. Malcolm Perry, who was at that time Secretary of the Wireless Institute of New South Wales, and acquainted him with my ideas, at the same time pointing out the advantages that would undoubtedly be obtained by the amalgamation of the Wireless Institutes in the various States, and bringing them together as the Wireless Institute of Australia.

I received much encouragement from Mr. Perry and on the 4th April, 1919, at the annual meeting of the Wireless Institute of New South Wales I became a member of that body.

I then caused advertisements to be inserted in the various newspapers in Adelaide calling attention to the desire to form a Wireless Institute in this State, and also wrote to all the pre-war experimenters with whom I could get in touch and received a very encouraging reply from Mr. Hamby Clark, who afterwards became our President.

As a result of advertisements I became acquainted with Mr. Adam Mather, who proved a great help in gathering in members.

The result was that on 10th September, 1919, a meeting was held at my house at Carlton Parade, Torrens, at which the formation of the Institute to be known as the South Australian Section of the Wireless Institute of Australia was endorsed and a committee was formed, with the object of drawing up a code of rules, comprised of the following members: President, A. Mather; Vice-Presidents, Ralph Lee and Hamby Clark; and Messrs. W. H. Smith, D. G. Malpas, H. C. Coles, R. M. Dunstone, R. Wyatt, C. J. Poole and C. E. Ames, Secretary.

It was decided to adopt the rules of the NSW Section until our own new constitution could be drawn up and adopted. The annual subscription was fixed at 10 shillings and sixpence per year.

Present at that meeting were the following, who all became members of this Section: Messrs. A. Mather, R. L. Lee, D. G. Malpas, D. A. Smith, W. J. Bland, H. C.

Coles, R. O. Wyatt, C. J. Poole, J. M. Honnor and C. E. Ames. Absent members elected were Messrs. R. M. Dunstone, A. B. Cox, W. Jenkinson, C. J. Spencer and C. Barlow.

A second meeting was held at Carlton Parade, Torrens, on the 24th September, at which six new members, namely Messrs. T. M. Heagney, R. O. B. Matthews, B. M. Brimage, J. W. Wilkin, J. R. Finlayson and A. G. S. Paine, were elected.

On the 15th October the Council met at the office of Mr. R. O. C. Matthews, Grenfell Street, Adelaide, for the purpose of drafting a set of rules. This was done and at a general meeting called as the first Annual Meeting on the 5th November at the office of Mr. R. M. Dunstone, Alfred Chambers, Currie Street, this new constitution was adopted. An election took place and the following officers were elected: President, J. W. Hamby Clark; Vice-Presidents, T. H. Heagney and R. L. Lee; Hon. Secretary, C. E. Ames; Hon. Treasurer, R. O. C. Matthews; Council, W. H. Smith, W. Harrison, R. M. Dunstone, D. G. Malpas, H. C. Coles, V. R. Cooke.

The document written by Mr. Ames is in a most even hand and typical of the old copperplate handwriting which is rarely seen these days. Examples of such writing from the original minute book are reproduced with this article.

It is interesting to note that the Mr. V. R. Cooke mentioned as an elected member of the first Council of the Division is still alive and is an active amateur under the call sign of VK5AC. Roy can be heard most Sunday mornings participating in the 20 metre call-back after the Sunday morning broadcast.

Two interesting snippets from the minute book are the fact that the annual subscription of ten shillings and sixpence, known in those days as "half a guinea", could be paid in two instalments and that very early in the days of the Division it was decided that lady members could not be admitted to the Division.

The Mr. Hamby Clark mentioned as being the first President of the Division was the father of the well known Adelaide identity of the same name who runs a gun dealership in the city.

An excellent book entitled "A History of Radio in South Australia 1897-1977", written by John F. Ross Firee (Aust.), was published last year and includes as the second chapter a total of 66 pages devoted to the history of the South Australian Division and amateur radio

SUNSPOTS, DX AND GETTING AMONGST IT

Ken McCracken VK2CAX

Amateur radio thrives on unreliability. The VHF fraternity, the DX hounds, and even the dyed in the wool earbasher get much of their enjoyment through exploiting freak conditions. And every single variability in propagation conditions is attributable to our Sun. This article shows how.

INTRODUCTION

Strangely enough, the two most important features of the sun, insofar as the amateur is concerned, is that it is large (diameter approximately one million km) and that it rotates. Consequently it has a strong magnetic field. Instabilities in this field cause waves to travel up through the solar atmosphere and heat the corona to a high temperature (approximately one million degrees centigrade). A gas at this temperature emits X-rays which create our ionosphere by ionizing the upper layers of the earth's atmosphere. The X-ray emission rate varies from day to day, from year to year, and consequently radio conditions vary in sympathy.

Occasionally an extremely large instability occurs in the solar magnetic field near a sunspot, and an immense amount of energy is released into a volume about as big as the earth. This results in a magnificent explosion; we call it a solar flare. A burst of X-rays hits the earth 9 minutes later; a magnetic storm occurs about 24 hours later and the Van Allen radiation belts are severely disturbed. Each of these events affects radio propagation to a large degree.

The VHF man also must thank the sun for heating our atmosphere, thereby creating the weather patterns and high altitude winds he needs for tropospheric and sporadic-E propagation.

Finally, a little bit of radio archeology. Historical records of the sun indicate to us that Captain Cook probably would have been able to work London on 52 MHz if Hertz and Marconi had come along a little earlier. The next such occurrence should be about 2126 AD.

The amateur operator is well aware of, and in many cases thrives on, the variability of radio propagation conditions. Daily, monthly, seasonal, and year to year variations are clearly recognised. The year

to year variability is well known to correlate with the "Sunspot number", and from this our ionospheric predictions are derived. But we see a sunspot because it is cooler than the rest of the sun; why should the earth's ionosphere get denser as the number of cool spots on the sun increases? Clearly, there is a lot more physics here than meets the casual eye.

In fact, the sun is totally responsible for our ability to communicate via the ionosphere, and every type of variation in radio propagation is attributable to the sun. This article seeks to outline the complex interplay of seemingly unrelated factors that brings this about.

HEATING AND STIRRING

Our sun (an average star) commenced its life as a small condensation of cold dust and gas in interstellar space. This condensation exerted a gravitational attraction on nearby dust and gas which "fell" into the condensation, increasing its mass, thereby increasing its gravitational field and thereby "sucking" in more dust and gas. Thus, it grew bigger and bigger.

As an atom fell towards the infant sun the gravitational force caused it to speed up; then it hit the infant sun, its kinetic energy heated the sun up very slightly. Each new atom increased both the mass and the temperature of the sun. Ultimately the centre of the infant sun reached a temperature of 10 million degrees, then "nuclear fusion" commenced. In this process four hydrogen atoms unite to form a helium atom, releasing a great amount of heat in the process. The sun had been "lit", and it was henceforth able to maintain its temperature from its internal resources.

As water goes down the bath hole, it rotates faster and faster the closer it gets to the hole. The same laws of physics affected our infant sun, so that the gas as it fell into the sun swirled around with

increasing speed. The lazy motions of the dust and gas prior to the condensation of the sun resulted in a star that was spinning about its axis. The sun now spins about its axis with a period of 25 days. Strangely enough this spinning motion is crucial to the HF operator. If the sun did not spin, there would be no ionosphere! Let's see why.

Gases at 10 million degrees are excellent conductors of electricity; and the infant sun therefore became an immense (about 1 million kilometres in diameter), rotating electrical conductor. A weak magnetic field pervades space, and, as in the case of an electric dynamo, electric currents started to flow in the moving conductor (the sun). These currents in turn generated magnetic fields of their own, which generated further eddy currents. Positive feedback occurred, and ultimately strong magnetic fields were built up inside the sun. The continued rotation of the sun prevents these fields from decaying. Unlike the magnetic field of the earth, the majority of the sun's magnetic field is inside the sun; that is, the majority of the lines of force never emerge from the surface.

SPOTS AND KNOTS

The sun is completely gaseous, and some parts therefore can rotate faster than others. The magnetic fields become especially strong at the interface between such regions, and big kinks and knots are also formed in the magnetic field lines. The regions of strong magnetic field contain less gas than adjacent regions, and they therefore "float" to the surface of the sun, taking the magnetic field with them. Such an occurrence is illustrated in Figure 1. This protrusion of the magnetic field through the surface of the sun is the most important single feature of a sunspot.

The light our eyes see from the sun originates in a layer called the photosphere, where the average temperature is 6000°C. The sunspot magnetic field causes

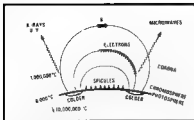


FIGURE 1: The important components of sunspot group. The two sunspots may be up to 100,000 km apart.

the gas in the sunspot (i.e. where the field is strongest) to expand and cool down. The gas is therefore less incandescent, and we see a dark spot. (As is obvious from Figure 1, we usually see sunspots in pairs, one having a "North" magnetic polarity, the other "South"). These dark spots, themselves, have no effect whatsoever on our ionosphere.

Other effects are occurring that we cannot see with our eyes, however, the hot gas below the photosphere rises, setting up convection cells similar to the thunderheads that occur in our atmosphere on hot summer days. The hot, convecting gas causes the magnetic lines of force to vibrate, and powerful waves ("magnetohydrodynamic waves") propagate away from the sun. They carry much energy with them, which is then dissipated in the region up to several million kilometres above the photosphere. The dissipation of these waves heats the gas to very high temperatures of about 1 million degrees.

All hot bodies radiate electromagnetic radiation, the wavelength decreasing with increasing temperatures. Thus, while the 6000°C photosphere radiates optical wavelengths, the million degree corona radiates X-rays and ultraviolet radiation. It is this radiation that generates our ionosphere, and it is the variation in the number and temperature of the coronal "hot spots" over the sunspots that makes the ionosphere wax and wane.

Other things are happening in the sunspot magnetic field as well.

The gas is highly ionized, and some of the individual electrons are accelerated to relatively high energies by the hydro-magnetic waves that are travelling up the magnetic field from the photosphere. These electrons then spiral back and forth in the sunspot magnetic field, in the same way that electrons bounce back and forth between the two hemispheres in the Van Allen radiation belts around our (and other) planets. As they spiral around in the strong field they radiate microwave radio waves. These waves, themselves, have no effect whatsoever on our ionosphere, but their intensity is determined by the number, size and the magnetic properties of the coronal

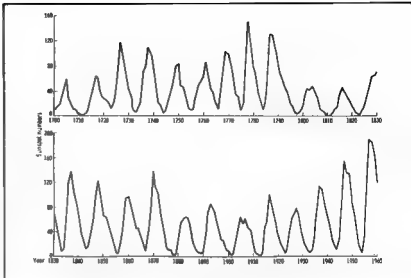


FIGURE 2: The sunspot numbers for the past three centuries.

hot spots. That is, the microwave emission is correlated in a general way with the X- and UV-emissions, and this is the basis for the use of the 10 cm microwave emission index to predict ionospheric behaviour.

ONE LUMP OR TWO

From the above, it is clear that our best way to study and predict the condition of the ionosphere would be to measure the solar X- and UV-radiation intensity. But these radiations are totally absorbed in the topmost 0.1 per cent of our atmosphere, and until recently, we had to make do with the information we could obtain from the optical wavelengths and microwave wavelengths that could penetrate to ground level.

Empirical studies have shown that the number and distribution of sunspots gives a useful barometer that correlates with ionospheric and other geophysical parameters. A rather arbitrary parameter, the Zurich sunspot number $RZ = 10G + S$ is usually used to quantify the sunspot information. In this formula "S" is the total number of individual spots that can be seen on the sun's disc, while "G" is the total number of separate groups of sunspots (e.g. the sunspot pair in Figure 1). Galileo was the first man to see sunspots (and got into some trouble over it), and records have been kept ever since. The sunspot numbers for the past three centuries are shown in Figure 2.

The well known "eleven year" cycle is evident in Figure 2. But look closely in the years between 1850 and 1940. Note how every second cycle is systematically lower than the adjacent cycles. Analysis of the

light from sunspots indicates that the magnetic properties of the spots also alternate between two different states from one cycle to the next. In reality, the physics of the sun exhibits a (roughly) twenty-two year periodicity. Thus the next sunspot maximum (1980) will be a direct descendant of the high maxima of 1872, 1895, 1918, etc., while the recent 1969 maximum was the successor to the low maxima of 1863, 1907, 1929, etc. It is therefore possible that the 1980 maximum will be more like that of 1958 than that of 1969.

MEANWHILE, ON EARTH

The X- and UV-radiation from the sun ionises the earth's atmosphere above an altitude of about 100 km. The number of electrons per cubic centimetre (i.e. the "electron density") is plotted against height in Figure 3. At a time of high solar activity (i.e. high sunspot number and many coronal hot spots) the X- and UV-intensity is greater, and hence the electron density is greater. Incidentally, Figure 3 shows that the ionosphere is a single region some 150 km thick, and that the D, E, F1 and F2 regions are not separate layers but correspond to kinks in the electron density curve.

Figure 4 shows how a radio wave is reflected by the ionosphere. The wave travels in a straight line until it reaches the bottom edge of the ionosphere, when its path commences to bend. Provided the path does not reach the layer of greatest electron density before the wave is travelling parallel to the earth's surface, the wave will return to earth.

The frequency which will just be "reflected" back to earth from the point of greatest electron density when the wave is

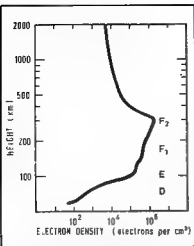


FIGURE 3: The manner in which the concentration of electrons in the ionosphere depends upon altitude.

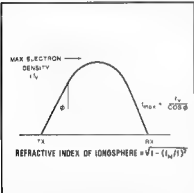


FIGURE 4: A radio wave is gradually refracted as it moves through the ionosphere. This figure shows the path followed by a radio wave as it is returned to earth via the ionosphere.

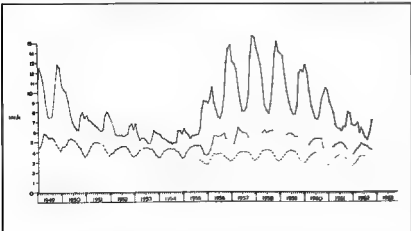


FIGURE 5: The variation in the critical frequency (that is, the highest frequency that will be reflected) of the F1 and F2 layers in England throughout the sunspot cycle 1954-1963.

initially travelling vertically upwards, f_v , is a useful parameter that helps us predict radio transmission characteristics. It is usually referred to as f_oF_2 . For a radio wave hitting the ionosphere at an angle of ϕ , the highest frequency that will be reflected is $f_v / \cos \phi$. For example, if $f_v = 12$ MHz, and $\phi = 10^\circ$, then the maximum frequency that would be reflected would be 35.1 MHz. Note that the above formula ignores the curvature of the earth; the earth's magnetic field also complicates the matter somewhat. f_oF_2 depends upon the maximum electron density in the ionosphere according to the formula:

$$f_oF_2 = 9.002 \times 10^3 \sqrt{n_p \ln H_z}$$

As the sun's activity increases (i.e. more coronal hot spots) the increased X- and UV-radiation causes p to increase, and more coronal hotspots) the increased X- thus f_oF_2 must increase. This effect, wherein f_oF_2 increases as the Zurich sunspot number increases, is illustrated in Figure 5.

CRYSTAL BALL DEPARTMENT

Using historical data that relates the world wide f_oF_2 values to solar activity, and for an assumed prediction of future solar activity, the Australian Ionospheric Prediction Service (IPS) makes predictions of the MUF for paths of length λ , and 3000 km.

Figures 6 and 7 are examples of the MUF (3000) charts issued by the IPS on a monthly basis. To find the maximum frequency for a given 3000 km path, the value of frequency at the midpoint of the path should be read. Note particularly that these maps predict the median MUF; that is, for 50 per cent of the month the MUF will be lower, for 50 per cent of the month it will be higher. The variability of the MUF is a result of the fact that sunspot regions (and consequently, coronal hotspots) are not distributed evenly around the sun. Consequently the number of coronal hotspots that can affect the earth varies from day to day as a result of the rotation of the sun.

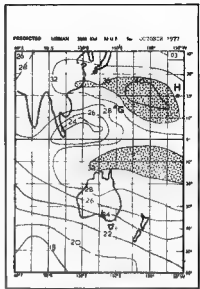


FIGURE 6: The maximum usable frequency (MUF) over paths of 3000 km for the Australasian region at 0130 UT for October, 1977.

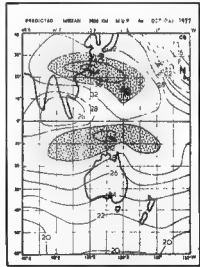


FIGURE 7: The maximum usable frequency (MUF) over paths of 3000 km for the Australasian region at 0630 UT for October, 1977. Note how the regions of high MUF have moved westward.

Comparison of observed and predicted MUFs suggests that the MUF will be about 1.5 per cent high for 10 per cent of the days in the month. The maximum distance for one-hop transmissions is 4000 km, and the MUF for 4000 km is 1.1 times the MUF

for 3000 km. Thus for 10 per cent of the month, the MUF for 4000 km will be

$$M(4000) = 1.15 \times 1.1 \times MUF(3000) \\ [10\%] \\ 1.27 \times MUF(3000)$$

Figure 7 gives the median MUF at 0600 UT for October 1977, at which time the first real 50 MHz DX of this sunspot was being observed in the Pacific. Figure 7 immediately shows part of the reason. Look at the Guam to Japan path (roughly 4000 km). The midpath MUF from the map is 42 MHz. Thus for 10 per cent of the month, the 4000 km MUF would have been $1.27 \times 42 = 53$ MHz. That is, the path would have been open by simple one-hop F2 transmission. Four hours earlier (Figure 6) the region of high MUF lay between Hawaii and Guam, and two-hop F2 propagation was possible on 6 metres for 10 per cent of the time.

Both Figures 6 and 7 show two regions of high MUF north and south of the equator. Simple theory says that there should only be a single region of high MUF, and the observed fact that there are two was called the "equatorial anomaly". Six metre operators should be eternally thankful that theory was wrong!

Figure 8 is a schematic representation of the ionosphere along the path from Darwin to Southern Japan. The two patches of high electron density, north and south of the earth's magnetic equator, can be seen. The path followed by a 6 metre wave leaving the transmitter at a low angle is shown. It can be seen that the refraction of the waves in the southern patch of high electron density is insufficient to return the waves to earth. However they are then refracted again by the northern patch, and the wave then reaches the earth. This is "chordal hop" transmission, and refers to the day time trans-equatorial propagation mode (TEP). Even TEP will not be discussed here, other than to say that it is less well understood, and presents the amateur with an excellent opportunity to perform meaningful research of world-wide significance.

THROUGH A GLASS, DARKLY

What then are the prospects for VHF DX during the 1980 solar maximum?

Despite an excellent set of records of the previous "form" of the sun in its last 25 races (Figure 2), the pundits find it very hard to set the odds for this next race. Predictions vary widely. For interest, however, Figure 9 is one of the more optimistic predictions of the way in which the Zurich sunspot member will behave. It predicts a maximum that is comparable to that of 1958!

Assuming that Figure 9 were correct, what would the propagation conditions be near solar maximum? Roughly, the MUFs in 1980 would be about 1.3 times those in Figures 6 and 7. Thus the median MUFs for 4000 km would be 1.43 times those in the Figures, and for 10 per cent of the time they would be 1.65 times greater. The

actual contours of MUF would be very different in the other seasons of the year, and other times of day, however the general features remain.

Applying the above factors to Figures 6 and 7 predicts the following possibilities for 6 metre DX in 1980:

Perth to Singapore; single hop F2; 50 per cent of the time.

Darwin to South India; two hop F2; 10 per cent.

Brisbane to Hawaii; two hop F2; 10 per cent (also chordal hop).

Sydney to Guam; one hop F2; 10 per cent.

Darwin to Tahiti; two hop F2; 50 per cent.

Northern Australia to Peru; just possible (four hop F2).

Northern Australia to South Africa; possible (three hop F2).

Northern Australia to Southern Russian (longitude 75°E); chordal hop.

Furthermore, such paths will be extended to higher latitudes, and greater distances, if there is sporadic E at either end of the path. Six metres to Eastern Europe, Africa and South America certainly seems feasible.

Finally it should be recognised that the average 6 metre station has improved significantly over the past 11 years, and even more so since the solar maximum of 1958. Higher power, narrower bandwidths, better antennas and lower noise front ends have all increased the station gain between most stations. Reasonable numbers for each of these factors suggest an increase

In average station gain, compared to 1969, of between 12 and 15 dB, i.e. some 2 to 2½ S points. This, plus a greater number of stations, means that there will be a considerably greater probability that a path will be used when it is open. Longer multiple hop paths will become workable.

In summary, worked all continents on 6 metres from Australia is conceivable in the years ahead. Certainly, widespread communications with Asia and the Pacific and Indian Ocean regions via F2 propagation is a certainty. Openings may often be short, however, and will frequently go unnoticed through lack of amateur stations. It will be fruitful to test strange paths (e.g. due east to South America via the corridor of high ionization (MUF) in Figure 6) at the right times. The sun will cause these paths to open; the problem is to be there at the right time.

Be in it!

(Reproduced from the Proceedings of FACT Symposium 1978.) ■

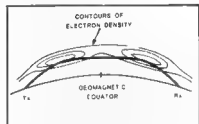


FIGURE 8: Illustrating chordal-hop propagation.

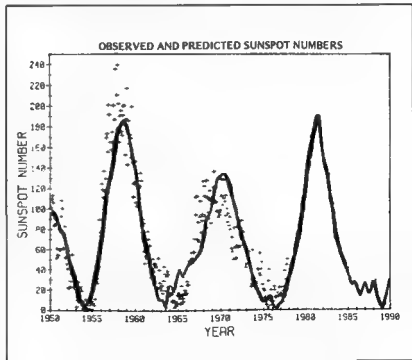


FIGURE 9: The predicted sunspot number of the present sunspot cycle.

REPEATER TIMER TIMER

Dave Cooper VK7ZDC
PO Box 212, Bellville 7108

Here is a device which gives the operator an audible warning prior to the repeater time out. It can be fitted to most transceivers via the auxiliary socket, in which case no modifications are required.

The time interval can be varied over a large range (with values shown, R2 limits provide 1.5 mins to 4.0 mins). As can be seen, the circuit has been kept as simple as possible, consistent with reliable operation.

The circuit is based on the 556 (LM556, NE556, etc.), being a dual version of the 555 Timer in a single package. The operation of the device is easily understood and will not be explained here as it is adequately covered on the manufacturer's data sheet.

CIRCUIT OPERATION

During the receive mode, pins 4 and 10 (resets) are held low by R7 disabling both sections of the device. (Note: C2 is discharged.)

Operation of the PTT switch raises pins 4 and 10 to 12V. Pin 6 (Trigger) goes low momentarily providing the trigger to set the time in operation. Pin 5 (Output) goes high holding C3 charged via D1, thus disabling the audio oscillator. The timing period is now under way, dependent on the values of R1, C1, and the setting of R2. When the upper trigger point is reached, pin 5 goes low, enabling the audio oscillator.

The audio oscillator is a basic stable configuration, the frequency being set by R5, R6 and C3. The output level is set by the value of C4.

The circuit can be reset at any time by releasing the PTT switch.

CONSTRUCTION

The circuit was built on a PCB (Fig. 2) and mounted in a Kodak slide container (20 slides x 35 mm), this being attached beneath the transceiver with rubber bands. The four external connection plug into the auxiliary socket of the transceiver.

COMPONENT LIST

- R1—2M Ohm
- R2—10k multiturn trimpot
- R3—47k
- R4—1k2
- R5—12k
- R6—1k2
- R7—1k2
- All resistors 1/4 watt
- C1—47 uF 15V electrolytic
- C2—4.7 uF 15V electrolytic
- C3—0.056 uF ceramic
- C4—0.022 uF ceramic
- D1—1N914 (or any small diode)
- IC—556 (or 2 x 555)

Speaker—A rock armature earpiece from an old telephone or small speaker

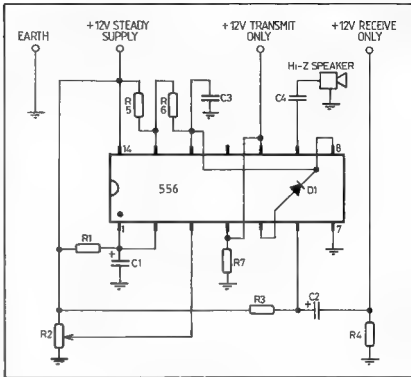


FIG. 1: Circuit diagram.



FIG. 2A: PCB layout, copper side.
Approx. half size

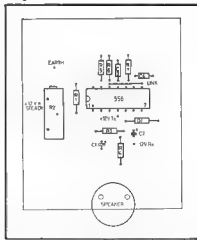


FIG. 2B: Component layout.

SUGGESTED REFINEMENTS

If several time intervals are required, several resistors could be switched in place of R1.

If a repeater/simplex switch is available this could be used to disable the device during simplex operation.

MODIFICATIONS TO SOLID STATE VIDEO SWITCHES

C. Maude VK3ZCK

2 Clarendon St Avondale Heights 3034

After reading the article by Andrew Pierson in AR March 1979, I decided to build one of his type 1 switches using 4016s.

I designed a printed circuit board similar to the one shown here with the component layout, the circuit worked very well. I am associated with DPTV10 (Melbourne's Cable TV station at Debnay's Park) and was not happy with the use of toggle switches for routing video around the console. The first switch I made eliminated some of the toggle switches and some screwed connections. What was then needed was a switch to provide one input to two outputs.

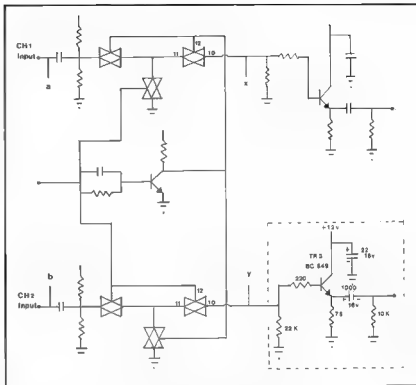


FIG. 1: Modified Circuit Diagram.

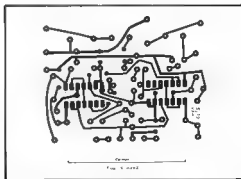


FIG. 2: PCB, Copper Side, Full Size.

FIG. 3: Component Placement.

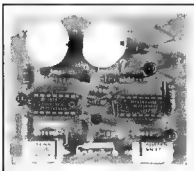


FIG. 4: PCB, Component Side.

are those required for the new circuit. The unlabelled ones are as in the original article. The components inside the dotted box can be left out and links X and Y joined if the original circuit is required. Two switch one input to two outputs join A

and B and include the circuitry in the box. The component layout shows these components marked with a star.

Both versions worked very well indeed and I thank Andrew Pierson for the original article.

A modified circuit was produced together with a printed circuit board, Figs. 2, 3, shown here. The board can be used for either the modified function or for the original circuit. The components in the circuit diagram, Fig 1, which are labelled

WHAT'S LEFT FOR THE NOVICE?

By Lance Ferris VK2NVF
PD Box 40, Casino, NSW 2470

Here's a duo-band yagi for 10 and 15 metres for those of you with a spirit of adventure.

When I attained my Novice licence in June 1978, I began to realise that the field of electronics had moved far ahead of its time and there appeared to be no obvious avenues for experimentation or invention by the newcomer. Rigs have become a "no-deposit, no-return, throwaway" shelf item exhibiting different brands and price tags, all doing much the same job. On the other hand, antennas seem to be "branching out" (pardon the pun) into many weird and wonderful designs.

One day I met Bert, an electrician, who was in the process of installing a power point. I stuck my chest out and told him I had just qualified as an amateur (I somehow forgot the word "Novice") and gave him some general advice in relation to the safety aspects of the installation of power points. In reply to my advice, he told me of his hobby, more than ten years experience in tracking satellites. I didn't need to open the door when I left the house, I found I could fit quite well through the crack at the bottom. His knowledge on antennas was mind boggling and I was delighted when he offered to send me some material on "circular polarisation".

For the next week, my brain was a whirling mass of antenna designs, one of which was circular polarisation on HF with crossed yagis. My four element home-brew yagi worked well, but being horizontal, propagation to local mobiles was limited. I needed a high gain system for vertical polarisation.

I tried 4 x 4 crossed yagis on 10 metres and the array seemed to be okay, although QSB still seemed to be a problem. Locally, because of rather mountainous terrain, mobile signals suffered and I also noticed QSB on DX skip contacts. On DX, however, I was able to eliminate quite a bit of QSB by switching back and forth from vertical to horizontal. For instance, when signals began to fade on the horizontal, quite often they improved by switching to vertical.

With the word "circular" still in mind, I saw a paragraph in the RSGB Amateur Handbook which read, "The use of circularly polarised antennas for general transmission and reception at HF is to be recommended where possible, since such an aerial offers the best compromise solution to the randomly varying elliptical



Rhonda VK2NWF and Lance Ferris VK2NVF.

polarisation experienced by waves undergoing ionospheric propagation and reflection." I then began to wonder, "What kind of mirror is the ionosphere?". The myth of it being a smooth, shiny, glass-like reflector has now been amended in my books. To me, it appears like the face of the moon, with mountains, craters, holes, humps, bumps and the lot. One also must consider the ground as it also is involved in the reflection process, and it certainly is not flat. It is these factors that obviously twist and turn the polarisation of the radiated signal, causing the received polarisation to differ, or in the case of "skip" to even become circular or elliptical. My crossed yagis catered for two aspects of polarisation.

Then the booklet arrived from Bert. The words "NASA — USA", heading the top of the page, had me boasting for two days, and when I had settled down, construction began on a bank of relays and an appropriate phasing harness. To obtain circular (axial-fire) polarisation from crossed yagis, the arrays are fed with a coaxial phasing harness which phases one antenna 90 degrees behind the other. By swapping the feed points the "sense" is determined, i.e. clockwise or anti-clockwise. The principle is widely used on VHF and above with crossed yagis and the "Helix". Why not on HF? Maybe the size of the array causes concern. Weight is

only marginally increased with the extra elements on the common boom.

Results were amazing. I found QSB on DX caused by polarisation changes was reduced and in many cases eliminated by a conservative 60 per cent of contacts. Similarly, ground-wave QSB caused by reflections was also considerably reduced and with the increased range, mountains and timbered country barely caused a problem with propagation to mobiles.

George W5KHN called me from Texas one day, and told me of his success story with his axial-fire yagis. He included a snippet about his friend Jim W4YHF, from Smyrna, Georgia, who "replaced his quad" with crossed axial-fire yagis, and "heard stations he had never heard before". That may sound, as it still does to me, somewhat surprising, but on many occasions I have heard signals of around 4/0 on the horizontal or vertical. By switching to circular, I have witnessed dramatic increases to 5/3. On one occasion, by switching to circular, I completely eliminated a back-scatter or long-path echo that was making a 30 km contact with Ross VK2NUD almost unreadable. On another occasion whilst talking to a VK5 on horizontal, Bill VK2VDI (another local) came over the back of the beam about 5/3. I switched to circular and I thought Bill had switched off. His signal was virtually eliminated. And one I'll never ex-

*A Call to all
holders of a*

NOVICE LICENCE

Now you have joined the ranks of
Amateur Radio, why not extend your
activities?

THE WIRELESS INSTITUTE OF AUSTRALIA (N.S.W. DIVISION)

conducts a Bridging Correspondence
Course for the AOCF and LAOCF
Examinations.

**Throughout the Course, your
papers are checked and com-
mented upon to lead you to a
SUCCESSFUL CONCLUSION.**

For further details write to:

**THE COURSE SUPERVISOR,
W.I.A.**

P.O. BOX 123,
ST. LEONARDS, N.S.W. 2065

TASMANIAN AMATEUR RADIO CONVENTION

**17th to 18th
November 1979**

**Held at the Matric College
in Alanvale Rd., Launceston.**

For Registration Forms or further
details, write to:

TARC 79 COMMITTEE

**P.O. Box 275, Launceston,
Tasmania 7250**

Please advise if you need assist-
ance with accommodation.

QSP

EXPERIMENTS RECEIVING LICENCE — 1913

Graham Austin VK3ANZ has forwarded to us a
photograph of an Experiments Receiving
Licence, issued to his father-in-law, Ted Holder,
and signed personally by the then Postmaster-
General, Agar Wynne, dated 5th December, 1913.

The receiving licence was issued under the
Wireless and Telegraphy regulations of 1905. These
regulations still form the basic part of our current
regulations today — only slightly amended.

In part, the Licence authorised Mr. Holder to
" . . . establish, erect, maintain and use at the
station specified in the First and Second Schedules
herein, appliances for the purpose only of receiv-
ing messages by means of wireless telegraphy . . . "

The First Schedule authorised the use of a
detector, condenser, tuning coil and telephones.

The Second Schedule depicted the authorised
circuit the above components were to be used in
— a simple crystal set.

Those were the days

SATELLITES

It is interesting to read details about the 150
satellites launched during the year 1978 as pub-
lished in the Telecommunication Journal of the
ITU. A few have a mass of 7 tonnes where mass
details are provided, others range around 1 to 1½
thousand kg. The two USSR amateur radio satel-
lites, Radio-1 and Radio-2 appear to have been
launched from Plesetsk piggy-back with Cosmos-
1045 on 26th October with a perigee of 1688 km
and apogee of 1724 km. Amstel-Oscar-8, however,
launched 5th March, showed 897 km and 914 km
respectively.

BANNED COUNTRIES LIST

"There is no banned countries list (American)
amateurs may presently communicate with other
amateurs in any country without violating (FCC)
rules." — QST July 1979

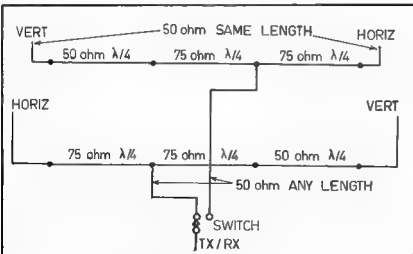


FIG. 1 (Above): Original harness circuit.

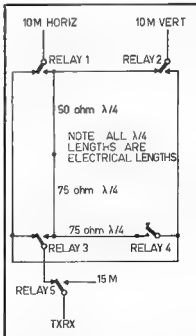


FIG. 2 (Right): Homebrew modification with relay system requiring one harness only.

AMATEUR RADIO ACTIVITIES

(STATE AWARD CONFERENCE)

The occasion was a visit by the Governor-General, Sir Zelman and Lady Cowen to the State Award Conference of the Duke of Edinburgh's Award Scheme held at the "Namaroo" Conference Centre, Lane Cove, NSW, on Saturday, 7th July, 1979.

On that day, over 100 young people from all over the State were on hand to provide demonstrations of the many facets of Award Scheme activities, including those associated with community service requirements, expedition, and physical skills.

A number of hobbies and interests were also on display for the benefit of the general public, friends of the Scheme, as well as parents of awardees, all of whom attended in large numbers.

One such exhibit was an amateur radio station operated by James Woodhill (VK2YKH/VK2/NYVW), a Duke of Edinburgh's Award candidate and a student at Hurlstone Agricultural High School, Glenfield, NSW. Jim was supported by a well known South Coast amateur, Brian Wade (VK2AXI), and other students from the Hurlstone Amateur Radio Club, whose members are mostly candidates for

Bronze, Silver, or Gold Duke of Edinburgh's Awards.

The station operated throughout the day using 80, 15 and 10 metres on HF, and simplex and repeater channels on VHF. Call signs used were VK2VQW and VK2YNH, the call signs of the Hurlstone Amateur Radio Club. Contacts were not, unfortunately, numerous, though the station and associated displays were well received through the day. The Governor-General stayed for some time and appeared particularly interested in the efforts of those concerned.

Appreciation is expressed to the WIA (NSW Division), for publicity material borrowed to support the display, and in particular to Tim (VK2ZTM) for his personal efforts in making such material available at short notice.

The accompanying photograph shows Jim (VK2YKH) with Brian (VK2AXI) answering a question from Sir Zelman Cowen.

Submitted by Ross Wilson (VK2VDH), Senior Resident Master at Hurlstone Agricultural High School, Glenfield 2167, 6th August, 1979. ■



The antenna at the home QTH.

plain . . . when working a DX station and a local calls in off the side of the beam, I can usually switch to a mode WITHOUT turning the antenna, and lift the local to 5/3 or better WITHOUT affecting my signal to the DX station.

Discovery of new properties of the array seem to be never ending and I would be particularly interested to hear from any amateurs who have tried a similar system on HF.

Three elements interlaced for 15 metres caused no problems with interaction, and allowed for wide spacing of elements on both bands, facilitating broader bandwidth, easier tuning and optimum gain. The basic layout of the horizontal elements can be found in the ARRL Radio Amateur Handbook, modifications being the elimination of the fourth element on 15m, and the addition of four vertical elements on 10m, coincident on the boom with the four horizontal 10m elements. Driven elements are gamma matched.

The relays used were "Siemens" mini relays, and a bank of five allowed for the four modes on 10m and switching to 15m. Although not coaxial relays, they have now been operational for almost 12 months and no problems have developed. It appears that this type of relay is not critical when used on HF, however I would not advise switching during transmission as this could probably cause arcing and burn the relay points.

The array, affectionately named "Tracker 11", sits atop a modified, winch-up, fold-over tower at a height of 17 metres. With 30 watts PEP the antenna has proved itself with excellent reports on both bands.

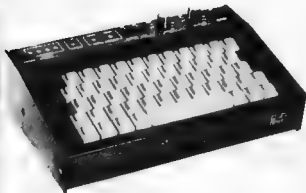
What's left for the Novice? . . . Read the fine print. Avenues are abundant. ■



The Governor General inspects the display.

the key to amateur communications

Hand keys from Bail . . .



Model HK-806. Heavy duty commercial hand key with full ball race pivots, heavy marble base and dust cover. The ultimate hand key. Price \$85.00.

Model HK-702 with marble base similar to HK-806 but smaller the HK-702 includes fine adjustment on spring and contact space. \$48.00.

Model HK-710. Heavy Duty De Luxe Hand Key, fully adjustable, ball bearing shaft, plastic protective cover. Mounted on heavy non-skid poly marble base. Base dimensions 168mm x 103mm. Price \$60.

Model HK-707. Economy hand key in all black ABS resin metal parts protected by moulded ABS resin cover. \$19.50.

Model HK-708. Similar to HK-707 but without cover and with smart chromium plated keying mechanism and flat American style knob. Price \$14.19.

8GEM-1 Memory based morse key operated in the same way as a typewriter. The 8GEM-1 allows you to type in your message at any speed while it transmits it at a constant speed. If your message is within 32 letters including spaces and signals, it is possible to call for the message to be repeated automatically. Want to know more? Call us or come in and see for yourself. Price \$475.

Model TC-701. Morse practice oscillator with built in key and speaker. Including battery and earphone. Copy of morse code on case. Two can be wired together to form a practice communication set. Price \$18.50.

Model MK-701. Manipulator (side swivel) for an electronic keyer. Accurate and restful keying operation are assured owing to a heavy metal plate and a frictional rubber belt beneath the periphery of the main base. \$40.00.

Model BK-100. Semi-automatic (buy) key with standard adjustments, wide speed range, protective plastic cover on heavy non-skid base, beautifully finished. Base dimensions 175mm x 75mm. Price \$49.00.

Prices incl. ST/Freight and Ins. extra/Prices and specifications subject to change



HK-707



HK-708



TC-701



MK-701



BK-100



50 Shannon St., Box Hill North, Vic., 3129. Phone 89 2213
Distributors in all states and N.T.

Including CW Electronics Brisbane (07) 48 5601

JAS7980 S

JIM BAIL VK3ABA

AGENTS & REPS: — W.A. COMO (09) 4464378 PERTH (09) 21 7600 KALGOORLIE (090) 21 1906
S.A. FLAMPTON (08) 260 2155 TAS. LAUNCESTON (0303) 44 5000 N.S.W. MASCOT (02) 667 1650
SEVEN HILLS (02) 624 2891 NEWCASTLE (049) 89 2500 VICT. WEGA WAGGA (036) 21 7152

COFFS HARBOUR (066) 54 3206 TAMMORTH (067) 66 1813 INVERELL (067) 22 1300 Q.L.D.
BRIISBANE (07) 221 2272 ALBION (07) 57 6800 TOWNSVILLE (077) 788778 CAIRNS (070) 51 4626
N.T. DARWIN (089) 31 8207

CHIRNSIDE ELECTRONICS

CHIRNSIDE AUSTRALIAN MADE ANTENNAS.

SOLID CONSTRUCTION.
DUO BAND 15-10 M
8 dB forward
20 dB front to back.

ONLY \$139.

15-10 M.

Duo-band CB4-2 15-10M 8dB gain \$139. Inc. Balun.

100 MPH. wind survival.

WRITE OR GIVE US A CALL TODAY!

All items subject to stock availability

HY-GAIN ANTENNAS.

TH8-DXX, 6el. 20-18-10M.....\$270.
TH3-JR, 3el. 20-15-10M.....\$175.
18-AVT, 8D-10M trapped vertical.....\$POA.
BN-85, 11:1 matching balun.....\$23.
.....\$20 with beam.

80M, 7' long.....	\$22.
80M, 6' long.....	\$21.
40M, 6' long.....	\$20
20M, 6' long.....	\$20
15M, 6' long.....	\$19.
10M, 6' long.....	\$19.

Bumper mounts to suit.....\$9.
SET OF ALL FIVE FOR ONLY \$95 INCLUDING BUMPER MOUNT.

MONO BAND BEAMS.

APPROX. GAIN.

Ce3-10, 3 el. 10M, 12' boom, 8 dB.....	\$59.
Ce-4-10, 4 el. 10M, 15' boom, 10 dB.....	\$74.
Ce-5-10, 5 el. 10M, 19' 6" boom, 12 dB.....	\$89.
Ce6-10, 6 el. 10M, 24' boom, 13 dB.....	\$105.
Ce3-15, 3 el. 15M, 16' boom, 8 dB.....	\$59.
Ce4-15, 4 el. 15M, 20' boom, 10 dB.....	\$114.
Ce5-15, 5 el. 15M, 24' boom, 12 dB.....	\$139.
Ce3-20, 3 el. 20M, 16' boom, 8 dB.....	\$139.
Ce4-20, 4 el. 20M, 10 dB.....	\$169.

Rotatable Dipole 10-30 MHz.....\$24.
Matching 50 ohm balun 1:1.....\$15.

All made from heavy wall aluminium with sturdy construction.

MOBILE WHIPS.

While stocks last

YAESU

RSL base mast inc. 2M.....	\$29
80 M. Resonator.....	\$21
40 M. Resonator.....	\$21
20 M. Resonator.....	\$20
15 M. Resonator.....	\$19
10 M. Resonator.....	\$19

It is worth coming a little further to get a lot better quality and service

YAESU.



ICOM

IC701



The fabulous state of the art ICOM IC701 solid state transceiver

IC-701, 160-10M HF Transceiver.....	\$POA.
IC-701PS, Power supply.....	\$248.
IC-225 FM 10 W. 2M Portable transceiver.....	\$288.
IC-211, All mode 2M transceiver.....	\$788.
Remote control for IC-701 or 211.....	\$157.

MISCELLANEOUS ACCESSORIES.

"Tono" 0-7000 communication computer.....	\$639.
Leader dip meter.....	\$89.
Leader ham oscilloscope.....	\$299.
Other Leader test equipment available.....	
Diana antenna coupler CHW-217.....	\$155.
Diana SWR meter, CN-620.....	\$99.
Diana Speech processor, RF-660.....	\$105.
TSW-120 2 pos. coax switch.....	\$15.
590G 5 position coax switch.....	\$38.
LP-42, Drake low pass filter, 200W.....	\$16.
Bumper mounts 3-8" x 24 thread.....	\$10.
RG-58U thin coax.....	40c per M.
Porcelain egg insulators.....	\$0c.
HO-Q balun 1:1.....	\$15.95.
HC-100A, Tokyo Hy-Power Labs. Transmatch	
500W PEP inc. 160M.....	\$119.

KENWOOD.

TS-820S, 160-10M Transceiver.....	\$635.
TS-120V, 80-10M Digital transceiver.....	\$POA
TS-120S 80-10M Digital transceiver.....	\$POA
100W output.....	\$670.
AT-120, Antenna coupler.....	\$94.
VFO-120 Remote VFO.....	\$145.
TS-190S, 160-10M, Digital transceiver.....	
4 tuning memories.....	\$125.
PS-20, 13.8 VDC. Power supply for TS-120V.....	\$110.
PS-30, Power supply for TS-120 & TS-190S.....	\$199.
AT-180, Antenna coupler/SWR and RF power meter.....	\$159.
AT-200, Antenna coupler/SWR Power meter.....	\$159.
SM-220, Station monitor.....	\$359.
TL-922, 160-10M linear amplifier, 2kw.....	\$1089.
MC-10, Hand mic.....	\$21.
MC-35, Noise cancelling hand mic.....	\$26.
MC-50, Desk mic.....	\$85.

ROTATORS

"EMOTATOR"

103LBX, Medium Duty.....	\$164.
502CKX, Heavy Duty.....	\$249.
1103CKX, Extra Heavy Duty.....	\$395.
502 Mast Clamp.....	\$32.
103 Mast Clamp.....	\$20.
VCTF-5, 7 Core Cable per Metre.....	\$1.20
VCTF-6, 5 Core Cable per Metre.....	\$1.20

DRIVE

DR-7500S, Medium Duty.....	\$179.
DR-7500G, Heavy Duty.....	\$248.

equipment sold by Chirnside Electronics is pre-sales checked and covered by 90 day warranty and export after sales service.

All prices include Sales Tax. Freight and Insurance extra.
Prices and specifications are subject to change without notice.

We handle and stock most Yaesu, Kenwood, Icom, Equipment.

CHIRNSIDE ELECTRONICS, 26 Edwards Road, Lilydale, 3140, phone (03) 726 7353.

CANADA- AUSTRALIA TV SATELLITE TRANSMISSION TESTS

by Bob Cunningham VK3ML

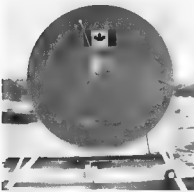
I was in Townsville at the commencement of these TV tests and, in company with Peter Snell VK4APS, I journeyed to Charters Towers on Sunday, August 5th, 1978, where the public had been invited to a demonstration at the RSL Hall.

The object of these tests was to prove that, with simple equipment, TV programmes could be sent to remote areas, such as in Australia, via satellites. The P. and T. Department arranged for the demonstration. The transmission emanated from Ottawa, Canada, and was picked up by a 1.2 metre diam. dish at a frequency of 12 GHz. The dish looked at an elevation of 7 degrees and a bearing of 85 degrees. The polarisation at the equator was horizontal but from the actual location it was 73 degrees.

The incoming signal was converted from 12 GHz to 1.2 GHz via a down converter which was placed at the focus of the dish. The output of this converter is fed via coaxial cable to an experimental 1.2 GHz receiver then to a standard TV monitor.

The exhibition on this occasion was carried out by two well known Queensland hams Brian Rickaby VK4RX and Neville Madden VK4EK, both from the P. and T. Department.

I witnessed perfect colour reception and according to the press the experiment was well received by the public. ■



Front view of the 1.2 metre dish for 12.4 GHz reception.

SAFETY EXPERT'S STORY: PLANNING SAVED FAMILY FROM FIRE

Submitted by Alan Isaachsen VK5IF

I have been a safety engineer for too many years not to retain a certain amount of professional detachment in the face of a major emergency, even when my family is involved. We safety engineers tend to be pragmatic about disaster and preach that we must be prepared for it through preplanning. Do we practice what we preach?

The storm of Monday, June 5, 1978, caused a disaster at my home, and I would like to share the experience with you. The lessons learned may prevent loss of life at your house.

At 7.45 p.m., my wife and two youngest children (5 and 10 years old) were home alone. I was at a friend's house helping him install a new cooler. My wife was listening to her CB radio. She calls it "copying the mail". The two little girls were playing in their bedrooms.

A sudden gust of wind bent the top of the radio antenna mast over until the tip came into contact with the power lines that run behind the house. The high voltage power was fed back down the antenna coax cable and into the radio, which immediately exploded. My wife, fortunately, was not touching the radio or microphone. If she had, she would have been electrocuted instantly. The ball of fire from the explosion resulted in flash burns on the side of her face and some singed hair.

The electricity then left the radio via its power connection and entered the house wiring system, looking for ground. It found ground in the washer in the utility room, and the washer exploded. This caused a second fire that my family did not see until later. Then the fuses blew, plunging my house and the entire neighbourhood into total darkness.

My wife called the children while getting our fire extinguisher and ordered them to take our three cocker spaniels and leave the house. The children went across the street to a lamp post where we had agreed we would meet and waited. Meanwhile my wife extinguished the fire at the radio and called the fire department. She then joined the children.

While talking to my wife, a neighbour spotted the fire in the utility room. Thanks to preplanning, my family did not re-enter the house.

The fire department arrived about twenty minutes later. After determining that no one was still in the house, they began fighting the fire. The paramedics treated my wife at the scene and suggested she be seen at the hospital by a doctor.

This precaution was necessary to ensure that her vision had not been affected. She agreed and called me from the neighbour's.

I arrived shortly thereafter to find the fire out and the firemen starting clean-up operations. The children were safe, so we went on to the hospital. The burns were only superficial. All we lost were "things". All my friends and neighbours commented on how lucky we were. True.

We were lucky that I had purchased a fire extinguisher for the home years earlier. Lucky that I taught my wife and the children how to use it. Lucky that I made sure periodically that it was serviceable.

We were very lucky that we had sat down as a family and discussed, in advance, what we would do in an emergency. Lucky we picked a nearby place to meet so we would know everyone was out safely, and lucky, too, that one of the rules is that once you are out, you stay out.

Yes, it was a beautiful disaster. Everyone did just exactly the right thing. Lucky? I don't think so. I think it was the result of the planning we had done much earlier. You can count yourself lucky, too, if you

1. Have a home fire extinguisher and make sure everyone in the family knows how to use it, and where it is kept.
2. Have a plan for getting out of the house in an emergency. This includes a nearby meeting place so Mum and Dad can count noses.
3. Agree on some rules in advance. (a) once you are out, stay out; (b) no favourite possessions are worth your life; (c) call the fire department even if you think the fire is out.
4. Install smoke detectors.

In this case it would not have made any difference, but most fires do not start so violently. Smoke detectors may buy you enough time to get out.

Pat Robinson, Motorola Inc. Semi-Conductor Group ■

ASIA-PACIFIC/AUSTRALIAN SCOUT JAMBOREE

The 4th Asia-Pacific/12th Australian Scout Jamboree is to be held at Perry Lakes, Perth, Western Australia, from December 28th, 1979 to January 7th, 1980.

Western Australian Scouts are excited about the prospect of presenting their first ever Jamboree, and a cordial invitation has been extended to Scouts from all over Australia and from Overseas, to share in this great activity.

The Jamboree has further special significance for Western Australians in that it will form part of a year long programme of celebrations for the State's 150th Anniversary, and will be a fitting climax to those celebrations.

The vast distances and small potential of people power do not deter Western Australians from thinking big. Although covering one-third of the Australian continent making it the biggest State in the world, the West has only eight per cent of its population at about 1.2 million people.

1979 is the State sesquicentenary (150th anniversary) year so many years ago the WA Scout Branch applied for the regular three yearly Australian Jamboree, always previously held in the populous Eastern seaboard States. This was agreed and the Jamboree becomes the final event in a year long birthday party embracing the whole population of all towns utilising all activities which could be imagined.

World Scout Bureau gave it regional status as the 4th Asia-Pacific Jamboree. Subsequently, with the postponement of the 1979 World Jamboree in Teheran, Iran, it became one of the 1979 World Jamboree Year Camps. About 8000 Scouts from Eastern States and over 100 from 30 overseas countries will mix with 2000 locals for eight days of camping, activities, sight-seeing, shopping, trying new skills, fraternisation and fun.

Because Amateur Radio amplifies many of these Jamboree concepts, e.g. new skills, fraternisation and fun, local amateurs are preparing one of the biggest VK6 stations ever mounted. Facilities will include:

A high frequency station on 20 or 15 metres operating round the clock beaming the world, including eastern States.

A high frequency station on 15 or 10 metres operating a day beaming eastern capitals.

A high frequency station on 40 or 80 metres operating as required with dipole aerials favouring north/south.

RTTY station operating most of the time as signals are available.

Amateur TV on UHF with special receivers located in sub-camp fraternity areas.

Three or more VHF stations on 2 metres and 6 metres and perhaps other bands.

A workshop will be included where, under the supervision of Amateurs the Scouts will be able to build a simple electronic working project. In addition a broadcast band radio station on 1610 kHz is in preparation so that items of news, happen-

ings, instruction and music can be conveyed quickly to all Scouts and for their entertainment.

It is expected that the stations will be busy with Amateurs in contact and that the special Jamboree Badge QSL Card will be in demand. It is hoped also that Scout Groups and units with Radio Amateur capabilities or friends will make a special time to get together during the Jamboree to make contact. Further, it is expected that many Groups round the world will want to make contact to find out how the Jamboree and their particular people are progressing. To assist these contacts SKEDS WILL BE ACCEPTED for a particular frequency, date and time BY MAIL to:—

Scout Amateur Radio VK6SH,
12th Australian Jamboree,
Box 467 PO, West Perth,
Western Australia 6005.

To test propagation conditions as far as is possible all skeds will be acknowledged by trying all contacts with one of the VK6 Amateurs on the organising team exactly FOUR WEEKS to the day and hour on which the contact is asked for. If that sked does not work another will be tried a week later—THREE WEEKS from the Jamboree.

The sooner that skeds are requested the better can the arrangements be.

The Jamboree is being held at Perry Lakes Stadium and associated grasslands—an international track and field site established for the Empire Games in Perth in 1962. The radio station is to be sited on the top floor of the stadium building using most of an area 250 ft. long by 11 ft. wide.

For further information contact:

JAMBOREE

Mr. Alex Shaw,
The Scout Association of Australia.
(WA Branch),
Box 467 PO,
West Perth, WA 6005.
Phone 321 7217
(Mr. Doug Napier)

RADIO

Mr. Peter Hughes,
Asst. Branch Commissioner,
58 Preston Street,
Como, WA 6152.
Phone 367 1740
(mornings 364 7588)

COMMERCIAL KINKS

With Ron Fisher VK3OM
3 Fairview Avenue, Glen Waverley 3150

After a long absence the FT-200 returns to our column, but before that a quick and easy modification to a not so well known two metre FM transceiver. The MULTI QUARTZ 16 is certainly not well known in Victoria. Perhaps there are more around in other States. Available up until about a year or so ago, they were a real bargain at \$175, complete with eight repeater and two simplex channels installed. At the time I obtained one for a friend, but of course tried it out before passing it on. Performance was quite good with one exception, the received audio quality was very woofy. There was a decided lack of high frequency response to the point the readability was poor under mobile conditions.

In checking out the trouble an audio signal was fed into the receiver audio section which proved to be almost hi-fi in quality. The lack of highs was traced to the discriminator which had apparently been designed with too much de-emphasis. Two capacitors were removed: C72, a .1 mF disc ceramic, and C73, a .02 mF green cap. It was not necessary to use a soldering iron, a quick twist with a pair of long nosed pliers was all it took. Received audio was now normal.

Now to the FT-200, Ian Huser VK5QV was having trouble with strong local signals overloading the receiver. A simple modification changed the AGC from RF to audio derived with apparently excellent results. Let's see how it was achieved.

The problem of strong RF fields operating the AGC in an FT-200 can be overcome by using audio derived AGC rather than the RF derived AGC used in the original circuit.

The conversion is simple, and can be completed in about 5 minutes once the components have been identified.

Remove the 100 pF capacitor (C127) and the "gimmick" capacitor (C185).

Connect a 0.047 uF capacitor between the top end of the volume control and pin 2 of the AGC amplifier (V102b).

Connect a 0.47 uF 150 volt polyester capacitor across C126.

Re peak L101, and the modification is complete. ■

QSP

MEMBERSHIP STATISTICS

The address label control totals for August AR show that for the first time ever two divisions exceeded one thousand each: VK4 recorded 1028 labels and VK5 recorded 1014. This is a far cry from only a few years ago when the totals were only 400/500 each for the same issue. Both VK2 and VK3 were very close to 2000 each. ■

FINANCIALLY SPEAKING

Courtesy Scott VK3BNG

The WIA is a service organisation dedicated to the amateur radio fraternity in Australia and, in particular, providing services to its members.

The extent of the services is limited by cost.

If income could be boundless then the imagination could run riot with all sorts of grand ideas but, of course, this is not the case.

Actually, much time and thought is put in by councillors and executives at the convention and at meetings to produce a balanced budget.

Balancing the budget in the most simplistic terms means providing an acceptable service at the lowest cost to the members.

The term "acceptable service" will mean different things to different people. There is no way of achieving total agreement amongst all members in this regard.

It is generally agreed that Amateur Radio and the publication of the Amateur Radio Call Book are highly desirable services.

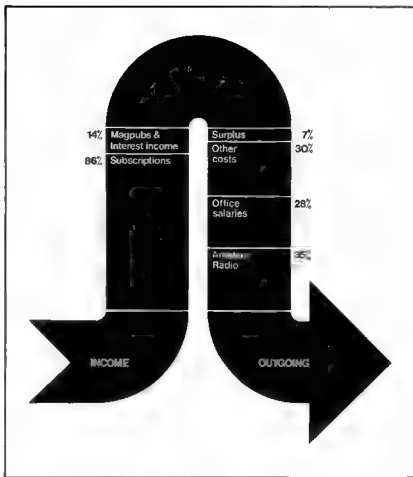
However, all thinking amateurs will be aware, particularly in this day and age, that representation at the appropriate places in protection of our hobby is a vital service. The need to speak with one voice.

Couple with these the diverse activities that are provided or are available to members and the sum total is that the WIA is not as stodgy as some would have you believe in servicing its members, and in some respects, non-members.

Illustrated is a general breakdown of income and expenditure for the year ended 31st December, 1978, of the Federal body. Full details were given in AR for July, 1979.

It will be seen that Amateur Radio takes 35 per cent of the income.

"Other Costs" refer to expenses other



than AR and Office Salaries, and include office rent, computer time, printing and stationery, etc.

Office salaries take 28 per cent of income. It is difficult to put a cost on some services but WIA could not exist with any strength without professional administration.

On the income side, note particularly

that subscriptions do not fully cover expenditure and we rely on the sale of publications and interest to make up the short-fall and provide a small surplus.

The Federal portion of subscriptions is a fixed amount per member. No one can say when inflation will cease and costs will invariably rise. So must the Federal dues. Either that or standards must fall. ■

AMATEUR RADIO MOBILE SOCIETY

OBJECTS OF THE SOCIETY

It was formed in 1959 to cater for all interests of mobile amateur radio on a world-wide basis. It is a truly international organisation. Members are in all continents, some countries represented are Australia, Canada, New Zealand, South Africa, the USA and many European countries.

MEMBERSHIP CONDITIONS

Australian amateurs are automatically eligible for Corporate membership as our licences permit mobile operation.

OVERSEAS REPRESENTATIVES

Overseas representatives exist in many countries, and the society is administered in the United Kingdom. The present secretary is Norman Fitch G3FPK, 40 Ekdale Gardens, Purley, Surrey CR2 1EZ.

MOBILE NEWS

Mobile News is the name of the society journal, published eight times a year. It contains technical articles, reviews of equipment, antenna ideas, interference suppression, etc. It also contains news of world-wide mobile events, reciprocal licensing, and so on. It is produced offset in A5 size and is of a high standard.

HEADQUARTERS STATION

Headquarters Station has its distinctive call sign G4AMS, which is used at events in the UK. It was operational in a weekly net for the benefit of overseas members in particular, on 21 MHz, but the co-ordinator recently discontinued the proceedings due to lack of support. As there are quite a few members in VK, it might be worth exploring the setting up of a local net for members or interested parties, at any rate on a trial basis. It is not suggested that participants should necessarily be mobile at the time of the net!!!

AWARDS

The premier award is the 'MOBILE CENTURY AWARD' for contacting 100 countries whilst operating mobile.

The WAC/Mobile certificate is for members only and is self-explanatory. The Maurice Margot Award is a special members only award, named after G3NMR, who did much for the society in the past and was a keen mobile DXer. Individual trophies are awarded each year for retention by the winners, who submit the best aggregate score in terms of the point-to-point distance in kilometres for up to three mobile-to-mobile contacts in each calendar year.

Contributed by Dick Ashton VK3DQ, PO Box 11, Woomera, SA 5720, who will endeavour to answer any queries upon receipt of a SASE. Membership enquiries should be addressed to G3FPK, 40 Ekdale Gardens, Purley, Surrey CR2 1EZ, United Kingdom. ■

QSP

LOTTO FACTS

Jonathan Kitchen VK6TU

The possible combinations of 6 out of 40 is 3,538,380.

Arranging the 40 numbers into three groups the possibilities in each group can be determined. The net possibility is the product of each group multiplied with the other groups. The three groups are

1-14	14
15-26	12
27-40	14

If all 6 numbers are put in the first group then none are left for the second and third groups. This is written as 6 0 0 .

The tables below are written in this manner, the possibilities of each combination are shown alongside. They total the figure above, 3,538,380.

6 0 0	3003	
0 6 0	924	
0 0 6	3003	

6930

5 1 0	24024	
5 0 1	28028	
1 5 0	11088	
0 5 1	11088	
1 0 5	28028	
0 1 5	24024	

126280

4 1 1	168168	
1 4 1	97020	
1 1 4	168168	

433356

4 2 0	86066	
4 0 2	91091	
2 4 0	45045	
0 4 2	45045	
2 0 4	91091	
0 2 4	86066	

404404

3 2 1	336336	
3 1 2	397488	
2 3 1	280280	
1 3 2	280280	
1 2 3	336336	
2 1 3	397488	

2028208

3 3 0	80080	
3 0 3	132496	
0 3 3	80080	

292656

2 2 2	548546	
-------	--------	--

548546

Grand Total 3538380

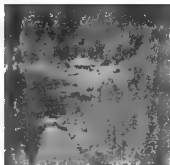
The table with 3 2 1 has obviously the greatest number of possibilities.

The line 2 2 2 has the greatest possibilities on its own.

To make 8 entries use 6 from the 3 2 1 table one from each line, and 2 from the 2 2 2 line. Take the 2 2 2 line, the first 2 means any 2 numbers from 1 to 14, the second 2 means any 2 numbers from 15 to 26, the third 2 means any 2 numbers from 27 to 40

Good luck.

A Totally New Concept for Amateurs!



For your next holiday, imagine

staying somewhere across the country or across the ocean at another Ham's QTH, while your own home is being cared for by another amateur who shares your interests and concerns. QTH Exchange Service provides listings, with photos, of numerous locations whose owners are looking for a unique holiday experience. Not limited strictly to exchanges, listings might include guest cottages, boats in marinas, spare rooms, summer homes, grass huts, condos, etc. All arrangements handled privately by owners themselves.

First edition available in March, 1980; fall supplement in October

Special Charter Subscription rate available until December 31, 1979 includes listing, directory and supplement for \$20. CAN or \$18 U.S. After January 1, 1980 rates will be \$25. CAN or \$22.50 US funds or equivalent

Please write for more information and an application form. Deadline for the spring directory is Jan. 31, 1980.

QTH Exchange Service

BOX 3329, MISSION, B.C. CANADA V2V 4J5

QSP

WHITE STICKS

A report in the Telecommunication Journal of July 1979 gives an outline of the projected production of 1,000 sticks for the blind as developed by or for the Swedish National Department for Technical Development. The sticks are equipped with a laser device emitting an invisible beam which is reflected by any solid object at a distance of 2m from the path of the person carrying the stick, whereupon a sound signal is triggered. The sticks are made of carbon fibre and plastic. Also reported is a system using underground cables and a portable receiver for shopping centres. The receiver sticks quietly as long as the user follows the path, but emits a special signal when he deviates from it on either side.

VICOM OPENS IN NEW ZEALAND

The active communications group, Vicom International Pty Limited has opened an office in New Zealand to handle the increasing interest there in consumer and professional communication products.

Their first target is the amateur radio market, which Vicom feels has been neglected by the traditional sellers.

A spokesman for Vicom said that most amateur equipment was sold conservatively in New Zealand and the hams there had not had the opportunity to buy from a professional organisation properly geared for their market.

"We hope to provide well-priced equipment backed by sound technical expertise and technical support. This has been a key to our success in the Australian market," the spokesman said.

Vicom's New Zealand office is located at 10 Lion Court, Upper Hutt. Phone (4) 28 7948.

"LISTENER" ACQUITTED

In the Melbourne Magistrates Court on the 2nd May, 1979, Mr. Walker, S.M., dismissed two charges against a Melbourne man brought under the Wireless Telegraphy Act. The charges related to the use by the defendant of a Bearcat 210 scanning receiver. It was alleged by the informant, an officer of the Postal and Telecommunications Department, that the receiver was used in contravention of the Wireless Telegraphy Act. The Bearcat 210 receiver covers the frequency bands 32-50 MHz, 146-148 MHz, 148-174 MHz, 450-470 MHz, 470-512 MHz and 418-450 MHz.

Evidence was given that the defendant had admitted to receiving amateur, CB, marine and police transmissions. Evidence was also given that the receiver was capable of receiving the Wireless Telegraphy Act. The Magistrate also found that, in any event, the defendant had an honest and reasonable belief that the receiver in question was capable of receiving broadcast programmes, "in effect that he would have dismissed the charges on this ground alone."

In dismissing the charges, Mr. Walker stated that he accepted the submission of Counsel for the defendant that the Bearcat 210 receiver was a receiver capable of receiving broadcasting programmes and by virtue of Section 130 (2) of the Broadcasting and Television Act a licence was not required for this receiver under the Wireless Telegraphy Act. The Magistrate also found that, in any event, the defendant had an honest and reasonable belief that the receiver in question was capable of receiving broadcast programmes, "in effect that he would have dismissed the charges on this ground alone."

DUAL LICENCE HOLDERS

At the last count of the W/A alphabetical computer listings a little over 250 amateurs throughout VK held two calls, either a limited/novice call or two full calls each.



APPOINTED DEALER



LATEST RELEASE TS 180s...

FEATURES DFS (DIGITAL FREQUENCY CONTROL)
ALL SOLID STATE * 160m to 10 METERS * TWO BUILT
IN MICROCOMPUTERS * FOUR MEMORIES * PLUS
MANY OTHER EXCLUSIVE FEATURES.

TS 520 S \$630.00 WHILE STOCKS LAST
TS 120 V TRANSCIVER
TS 120 S TRANSCIVER

TR8300 *Special*

UHF FM 10 WATT TRANSCIVER
wide band width, suitable for present and
proposed 70 cm. band plan. Optional
Crystals available to order.

PRICE: \$365.00

KENWOOD MICROPHONES.

MC - 10 Price \$20 MC - 50 desk Price \$55
MC - 35, noise cancelling Price \$25

KYOKUTO FM 2016 A



144 MHz DIGITAL PLL SYNTHESIZER FM TRANSCIVER
ALL ELECTRONIC MEMORY, 4 CHANNELS PLUS
SCANNING. 10 KHz STEPS
PLUS 5 up., 1,000 CHANNELS

PRICE AMATEUR NETT: \$360.00 (PACK & POSTAGE \$5.00)

MML 50/25 MML 144/25

25 WATT 50MHz LINEAR POWER AMP.
LIFIER & LOW-NOISE RECEIVE PREAMP
25 WATT 144 MHz LINEAR POWER AMP.
LIFIER & LOW NOISE RECEIVE PREAMP

* RUGGED 65W DISSIPATION PA TRANSISTOR * ULTRA LOW-NOISE
RECEIVE PREAMPLIFIER * EQUIPPED WITH RF VOX AND MANUAL
OVERRIDE * L.E.D STATUS LIGHTS FOR POWER & TRANSMIT
* SSB/FM, AM and CW

LINEAR AMP. PREAMP
Power profile 25 watts typical output
for 3 watts input
Frequency 50-54 MHz
bandwidth 144 148MHz at -1dB
Power 13.8 volts at 2.8 amps
requirement. for 25 watts output
Quiescent
current 75mA nominal at 13.8 volts

MML144/25 SPECIFICATION
RECEIVE PREAMP
Overall gain. 10dB typical
Overall noise figure Better than 2.5 dB
Frequency 50-54 MHz
bandwidth 144 148 MHz at -1 dB
Weight 300g
Overall size 150 x 65 x 47 mm



NEW PRICE AMATEUR
NETT \$105.00 Pack & Post \$3.00



PRICE MML 432/50 \$265.00 NETT

NEW MML 432/50

50 WATT 432 MHz LINEAR POWER
AMPLIFIER AND LOW-NOISE
RECEIVE PREAMP

FEATURES - 50 watt minimum output, 6dB typical gain * Rugged 145w dissipation
PA transistor * Ultra low-noise receive preamplifier * Equipped with RF vox and manual
override * Led status lights for power and transmit

SPECIFICATION

LINEAR AMPLIFIER Power profile 50 watts typical output for 10 watts input Power
gain 6 dB typical Frequency bandwidth 430 440 MHz @ -1 dB Power requirements 12.5
volts @ 8amps for 50 watts output 13.8V maximum Quiescent current 1amp nominal
@ 12.5 volts
RECEIVE PREAMP. Overall gain 10dB typical Overall noise figure Better than 3.0dB
Frequency bandwidth 430-440 MHz @ 1dB Receive current 75mA nominal @ 12.5 volts
GENERAL RF input connector 50ohm BNC RF output connector 50 ohm 'N' type
Weight 4 Kg (8lb 1.3oz) Size 315 x 142 x 80mm (12 3/8 x 5 5/8 x 3 1/8)

AMATEUR ELECTRONIC IMPORTS IS THE EXCLUSIVE AUSTRALIAN DISTRIBUTORS FOR
THESE PRECISION BRITISH MADE UNITS FROM MICROWAVE MODULES LTD.

AL - PRICES
FOB SYDNEY

All prices subject to change without notice. Onwards forwarding please add sufficient for freight or postage. Excess will be refunded.

Amateur Electronic Imports

P.O. BOX 160, KOGARAH, N.S.W. 2217
TELEPHONE: (02) 547-1467
CABLE: "AMATIMPORT, SYDNEY"

QUALITY ACCESSORIES FROM DAIWA

NEW!

AUTOMATIC ANTENNA TUNER

CNA 1001 200W \$269
CNA 2002 2.5 KW \$569

A new concept in antenna tuning.
Patent pending. Write for details.



SWR & POWER METERS

Model	Freq.	PWR	Cross-Needle	Price
CN820	1.8-150 MHz	20/200/1KW	yes	99.00
CN630	140-450 MHz	20/200	yes	135.00
CN650	1.2-2.5 GHz	2/20	yes	169.00
SW210A	1.8-150 MHz	20/120	no	99.00

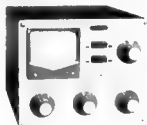
Cross-needle type offer DIRECT readings.



ANTENNA COUPLERS

CL67A	1.9-28 MHz, 500 wpp	135.00
CNW217	Includes SWR/PWR Meter, 200W	165.00
CNW417	Includes SWR/PWR meter, 500W	199.00

High quality couplers, 2 models includes cross-needle SWR/PWR meters



SPEECH PROCESSORS



RF660	Phasing type dc	109.00
RF440	Phasing type ac/dc	126.00
RF550	Fitter type, ac/dc	169.00
MC330	Speech compressor	99.00

Increase talk power with splatter free operation. RF clipping (not in MC330) assures low distortion. Simply install between microphone and transmitter.

Typical specs RF660
Talk power Better than 6dB
Freq Response 200Hz-3000Hz at 12dB down
Distort on less than 3% at 1 KHz, 20dB clipping
Power Req. 13.8 Vdc at 50mA.

ROTATORS

DR7500S	Medium Model	189.00
DR7600S	Heavy Duty Model	259.00

- High dependability weather sealed
- Quiet operation
- Complete with attractive controller

Rotation Torque	DR7500S 500 Kg-cm	DR7600S 800 Kg-cm
Braking torque	2000 Kg-cm	4000 Kg-cm



COAXIAL SWITCHES

2 Position model CS201	23.00
4 Position model CS401	59.00

Professionally engineered cavity construction
high isolation

Power rating: 2.5 KW pep, 1 KW CW
Impedance: 50 ohm
Insertion loss: less than 2dB
Maximum frequency: 500 MHz
Isolation: Better than 60dB at 300MHz

COAXIAL RELAYS

CX2L	100W pep max model	45.00
CX2H	200W pep max model	69.00

Quality change-over relays use 10-15 vdc
Frequency Range: CX2L 1.8-170 MHz
CX2H 1.8-450 MHz



VICOM

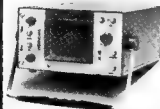
VICOM

68 Eastern Road,
South Melbourne,
Victoria, 3205
Ph (03) 699 6700

Available from your Vicom Dealer

LEADER TEST INSTRUMENTS

LBO 508A OSCILLOSCOPE



Bandwidth DC-20 MHz.
Sensitivity 10mV/cm.
130mm high C.R.T.

\$899

LDM 170 DISTORTION METER



20Hz-20kHz 0.3% F.S.
Measures distortion,
signal-to-noise ratio,
signal levels

\$490

LAC 895 ANTENNA TUNER



Built-in SWR and in-line
Watt meter. 5 bands
from 3.5 to 28 MHz.
500W pep transmitter
input.

\$182

LBO 510A OSCILLOSCOPE



20 mV/4MHz.
FET's input

BUDGET PRICED
\$399

LSG 16 RF SIGNAL GENERATOR



100KHz-100MHz
Solidstate RF signal
generator. Suited for
aligning the IF circuits
in AM, FM and TV sets.

\$119

LAG 26 AF SIGNAL GENERATOR



20Hz-200kHz
Stable generator for all
types of audio circuit.

\$166

LFM 39A WOW AND FLUTTER METER



For accurate and easy
determination of the
wow and flutter characteristics
of tape
recorders to JIS, CCIR
and DIN standards.

\$699

LMV 181A AC MILLIVOLT METER



AC Voltages from
100uV up to 300V. 5Hz-
1MHz.

\$189

Distributed by VICOM

SOUTH AUSTRALIA

Electronic Components and
Equipment
110 Tynte Street
North Adelaide
(08) 267 2246
International Communication
System
Dale Street
Port Adelaide

NEW SOUTH WALES

Radio Dispatch Service
809 George Street,
Sydney
(02) 211 0816
Custom Communications
Shop 11
Parramatta Arcade,
Darcy Street,
635 6399

Elektron 2000
44 Brown Road,
Broadmeadow
NEWCASTLE, 2292
(049) 69 1222
Macclec
99 Kenny Street,
Wollongong
(042) 29 1455

QUEENSLAND

Delsound
1 Wickham Terrace,
Brisbane, Queensland
(07) 229 6155
Fried Hoe & Sons
246 Evans St
Salebury North,
(07) 277 4311

WESTERN AUSTRALIA

Atkins Carlyle
19 Malignan Street
Perth
(09) 321 0101
A.C.T.
George Brown & Co.
23-25 Whyalla Street,
Canberra
(062) 95 0455

VICTORIA

Radio Parts Group
Spencer Street,
West Melbourne and
Dandenong Road,
Melburn
329 7888
Brownebrooks
93 Sackville Street,
Collingwood
(03) 419 3992

VICOM

COMPUTERISED 2 METRE FM RIG

NDI HC 1400



HC-1400

ALL FOR
ONLY **\$399**

*Microprocessor controlled
PLL circuitry
Repeater Offset
Tone Burst
800 Channels with 5KHz
Spacing 144-148MHz
3 Memory channels
LED Displays both TX &
RX frequencies
25 Watts Power Output (5 watts on Low)*

MOST YAESU HF PRODUCTS IN STOCK

**SPECIAL FT101E's with fan, DC-DC converter
& mic for only **\$829.00** (no hidden price extras)**

I M A R K

Pty. Ltd., 167 Roden St., West Melbourne, Vic. 3003
Phone (03) 329 5433

Available in South Australia from — Watson Communications, 75 Prospect Rd., Prospect, S. A. 5062 Phone (081) 2694744

BRISBANE HAM TASTES BETTER!

CW ELECTRONICS GETS RID OF THE
NORTHERN AMATEUR RADIO OPERATOR'S
BLUES.

One of the best and most comprehensive stock displays of
transceivers, test gear, communication computers etc. is housed
at CW Headquarters in Tarragindi, Brisbane.

CW Electronics is looking to offer
the northern amateurs a service
and selection that has never been
available in Queensland before.

- Inhouse warranty and servicing
- Managed and staffed by ex-
perienced amateurs
- mail order
- wide stock selection
- enquiry service
- Bankcard and terms — and more



TURN THE KNOBS, LOOK AT THE METERS, READ
THE HANDBOOKS OR JUST COME IN AND DREAM
— IT IS ONE OF THE FEW PLACES IN AUSTRALIA
THAT YOU CAN.



TRANS-
CEIVERS

CW

ELECTRONICS

Cnr Marshall Road and
Chamberlain Street
TARRAGINDI, Brisbane
Ph. (07) 48 6601
PO Box 274
SUNNYBANK, Qld 4109



PERSONAL
COMPUTERS



ELECTRONIC
TOYS &
GAMES

ICOM • YAESU • TEN TEC • KE NWOOD • COMMODORE PET
SCALAR • LEADER • JAYBEAM • HAL • HY GAIN

OPEN THURSDAY NIGHTS AND SATURDAY MORNINGS

Sideband Electronics Sales



KYOKUTO DENSHI CO., LTD.



SPECIFICATIONS-FM-2016A / FM-2016E

GENERAL

FREQUENCY COVERAGE. 144,000 - 148,995MHz, 10kHz steps & ±5kHz, 1000 channels.

144,100 - 148,995MHz, Datto above receive only, FM-2016E
144,001 - 145,995MHz, Transmit, FM-2016E

SEMI-CONDUCTORS

12 FET, 33 Transistors, 17 IC's and 65 Diodes

CHANNELS

4 channels
Scanning of 4 memory channels for open and closed channels
Better than ± 0.2%

SCANNING

SEQUENCE START/STOP
REARLE TEMPERATURE RANGE

+20°C to +60°C

POWER SOURCE

DC 11.8V, ±10% (negative ground)

ANTENNA IMPEDANCE

5 ohms nominal, unbalanced

CURRENT CONSUMPTION

Less than 1.4A receive standby, 1.6A maximum volume

OPERATING TEMPERATURE

Less than 1.4A receive standby, 1.6A maximum volume

OPERATING TEMPERATURE

Less than 1.4A receive standby, 1.6A maximum volume

OPERATING TEMPERATURE

Less than 1.4A receive standby, 1.6A maximum volume

**NEW
KYOKUTO
15W.
Output
\$360
Available Now**

From: **SIDEBAND ELECTRONICS**

SALES PH: 438 4191

AMATEUR ELECTRONIC IMPORTS

PH: 547 1467

FM — 6016 50 - 54 MHz FM \$330
800 CH. 25W.

NEW! SKY-BAND MOBILE ANTENNAS

THIS NEWLY DESIGNED UNIQUE MOBILE ANTENNA HELICALLY WOUND EXTRA HEAVY DUTY. SIX FEET LONG, AND CAN HANDLE UP TO 400 WATTS P.E.P.

FEATURES

Light weight
S.W.R. better than 1:1.05 at resonance
Covered with highest grade fireproof insulation
Chrome base with 3/8 24 tpi thread
Available in colours, grey, white, blue, green
burnt orange, brown and black.

AVAILABLE

SKY 80M 3.5 Special Novice
3.65
SKY 40M 7.06
SKY 20 14.150
SKY 15 21.100 and up.
SKY 10 28.5 and up.
SKY 10/15 special

PRICE LIST

SKY 80 6 feet long 3.5 MHz \$28
SKY 40 6 feet long 7.060 \$26
SKY 20 6 feet long 14.150 \$26
SKY 15 6 feet long 21.100 \$25
SKY 10 6 feet long 28.500 \$24
SKY 10/15 \$30

All Sky-Band Antennas are carefully designed and have been individually tested. High quality fibreglass rod, wound with optimum thickness of wire to keep weight down, but maintain High Q. An elegant design to those who only want the best. All antennas are factory tuned for the lowest portion of the desired band and can simply be trimmed for your chosen frequency. Yes it is all Australian made! You don't pay for large overheads, instead we use the best material available and offer a mobile antenna which will resonate to our frequencies, unlike the previous overseas designed antennas.

ORDER NOW AND SPECIFY THE COLOUR YOU REQUIRE

**SIDEBAND ELECTRONICS SALES, 477 - 479 PACIFIC HIGHWAY,
CROWS NEST. PHONE 438 4191**

100 WATTS ON 6 METRES!

An additional model now available. IC 551D with 100W output.

GRAB THAT DX!

IC551D* 100W \$850
IC551 10W \$799

*This model does not have FM option. Operates from 13.8 v d.c.

Features:

- **50-54 MHZ ALL-MODE TRANSCEIVER INCORPORATING A MICROCOMPUTER**
CPJ control with IC551's original programs provides various operating capabilities. No backlash dial controlled by IC551's unique photo-chopper circuit. Band-edge detector and Endless System provides out-of-band protection. No variable capacitors or dial gear, giving problem-free use. All mode capability: SSB, CW, AM and FM. Operating mode is indicated on the display unit.
- **MULTI-PURPOSE SCANNING**
Memory Scan allows you to monitor three different memory channels. Program Scan provides scanning between two programmed frequencies. Adjustable scanning speed. Auto-stop stops scanning when a signal is received. In all modes. Auto-start restarts scanning after a pre-set interval.
- **TWO VFO'S BUILT IN**
No extra equipment needed for split-frequency operation. Easy writing and reading of the three memory channels. Smooth and easy tuning with a 5KHz-per-tune memory scan. 100Hz increments. Complete 4MHz coverage without a band select switch.
- **EASIER OPERATION AND LIGHTER WEIGHT**
The most compact, lightest weight all-mode 50MHz transceiver. First to use a pulse power supply in communication equipment, for lighter weight. 50mm-diameter large tuning control knob for smooth and easy tuning. Trouble-free controlling knobs for both receiving and transmitting LED indicator for transmit and receive modes.
- **MOST SUITABLE FOR BOTH FIXED AND PORTABLE STATIONS**
Built-in 240V AC and DC power supplies. Convenient Dial Lock switch for mobile operation. Easy-carry handle. Effective Noise Blanker to reduce outcoming pulse noise. IC-SM2 high quality stand microphone is suitable for fixed station operation. Powerful audio output, 2 watts at 8 ohm, for easy listening even in noisy surroundings.
- **EXCELLENT SPOURIOUS AND INTERMODULATION CHARACTERISTICS**
IC551's specially designed helical cavities at both the input and output of the RF amplifier provide excellent intermodulation characteristics. Newly developed high quality FETs for the improved S/N ratio. Dual-gate MOS FETs for IF amplifier. Newly developed compact high quality crystal filter for better selectivity. Variable RF output power.
- **ACCESSORY CIRCUITS**
IC551's original effective Noise Blanker to reduce pulse noise. AGC selection to reduce QSB effect. RIT circuit to shift the receiving frequency without affecting the transmit tuning frequency. Includes voice control unit for smooth VOX operation. IC551's famous bandpass tuning to improve selectivity in the receive mode. RF speech processing in the transmit mode for that extra 'talk power'.
- **BACKED BY VICOM**
90 day warranty and technical/spares support

IC551 Specifications: □ General: number of Semi-conductors: Transistors 51 FET 13 IC includes CPU 30. Diodes 114. □ Frequency Coverage: 50 — 54MHz. □ Operational Temperature: -10°C — +60°C (14°F — 140°F). □ Frequency Stability: Less than ±500Hz after switch on 1 min to 60 min, less than 100Hz per 1 hour after 60 min, and less than ±1KHz in the range of -10°C to +60°C. □ Antenna impedance: 50 ohms unbalanced. □ Power Supply Requirements: 13.8V DC ±15%, negative ground, or 117V/240V AC ±10%. □ Power Consumption: Receive at min. audio level DC 0.9A AC 35W at max. audio level DC 1.1A AC 41W. Transmit in SSB/CW modes DC 3.3A AC 98W in AM mode DC 3.0A AC 92W in FM mode DC 3.3A AC 98W. □ Dimensions: 111mm (H) x 241mm (W) x 311mm (D). □ Weight: 8.1 kg. □ Transmitter: Frequency Modes: A1 SSB/USB, 5B A1 CW, A3H AM, F3 FM. □ RF Output Power: SSB/CW PEP (1 — 10W adjustable), CW 10W (1 — 10W adjustable), AM 4W (0 — 4W adjustable), FM 10W (1 — 10W adjustable). □ Modulation System: SSB/AM Balanced modulation FM Variable reactance frequency modulation. □ Max. Frequency Deviation: ±5KHz. □ Spurious Emission: More

than 60dB below peak power output. □ SSB Carrier Suppression: More than 40dB below peak power output. □ SSB/AM Unwanted Sideband: More than 40dB down at 1000Hz AF input. □ Microphone: 800 ohm dynamic or electret condenser microphone. □ Receiver: Receiving Mode: A1 (CW), A3J (USB, LSB), A3H (AM), F3 (FM). □ Receiving System: SSB/CW/AM Single Superheterodyne (Triple Superheterodyne when Pass Band Tuning unit is installed). FM Double Superheterodyne. □ Intermediate Frequency: SSB/CW/AM 9.0115MHz. (When Pass Band Tuning Unit is installed: 2nd IF 10.75MHz, 3rd IF 9.0115MHz) FM 1st IF 9.0115MHz, 2nd IF 455KHz. □ Sensitivity: SSB/CW/AM Less than 0.5 µV for 10dB S/N. FM More than 30dB S+N/D+N at 1 µV. □ Spurious Response Rejection: Ratio: More than 60dB. □ Selectivity: SSB/CW/AM More than ±1 KHz at -6dB. Less than ±2 KHz at -6dB. When Pass Band Tuning Unit is installed: less than 1 KHz at -80dB. FM more than ±7.5KHz at -6dB. Less than ±15KHz at -60dB. □ Squelch Sensitivity: SSB/CW/AM 1 µV. FM 0.4 µV. □ Audio Output Power: More than 2 watts. □ Audio Output impedance: 8 ohms.

VICOM

68 Eastern Road
South Melbourne Vic 3205
Ph (03) 699 6700
Telex AA 38935 PROVIC

Amateur Radio Division.

Check it out at your VICOM dealer.

SIDE BAND ELECTRONICS IMPORTS

P.O. BOX 23, SPRINGWOOD, N.S.W. 2777
WAREHOUSE 213 HAWKESBURY RD., SPRINGWOOD
TELEPHONE (047) 541-392

SPECIAL ANNOUNCEMENT In the future we will be operating under a slightly different format. Arie Bles-VK 2AVA will withdraw gracefully into the background whilst Roy Lopez-VK 2BRL will continue to operate the business using the same good, old fashioned, close-to-the-bone price structure which has proved so successful in the past. In the retailing of Amateur Radio Equipment Sideband Electronics Imports is no Johnny-come-lately! Arie can be said to have fathered the introduction of commercially built amateur radio equipment into Australia and to a great extent he has been responsible for ensuring that retail prices have been maintained at a sensible low level. Have a look back through our issues of Amateur Radio over the past 15 years, and more recently Amateur Radio Action, and you will see what I mean.

A MATTER OF PRINCIPLE. Arie's style will be maintained in the future, and under no circumstance will Sideband Electronics Imports assist in, or be a party to, the selling of Amateur Radio Equipment to known radio pirates or to the conversion of relatively high powered Amateur Radio Equipment for use on the 27-MHz CB-band. Such sales and conversions which are both unethical and illegal, may eventually lead to the revoking of the custom by-law which allows radio transceivers for strictly amateur consumption to be imported duty free, causing such equipment to attract heavy import duties with a subsequent increase in retail price. It is an unfortunate fact that some licensed Radio Amateurs involved in the retailing of amateur radio equipment are, for a price, carrying out such illegal conversions and sales. **OUR ADVICE — DON'T PATRONISE THEM!** ROY LOPEZ

HENRY RADIO — A brand new linear amplifier
1KD-5 10-80M 1200W PEP linear\$850

HY-GAIN ANTENNAS

TH6-DXX 10-15-20M 6-el yagi\$275
TH3-MK3 10-15-20M 3-el yagi\$240
TH3-JR 10-15-20M 3-el yagi\$180
18-AVT/WB 10-80M vertical\$110
204-BA 20M 4-el Tiger Array\$200
BN-88 balun for beam buyers\$20

HY-Q (USA) 50-ohm 1KW balun\$15
HY-Q (USA) multiband 10-80M dipole kit, wire, balun insulators, spreaders, etc\$45

ROTATORS & CABLES

All rotators now come with bottom brackets and control-indicator boxes wired for 28V AC operation
KEN KR-400 medium duty\$110
CDR BT-1A light duty 4 position push-button programmable\$90
CDR Ham III heavy duty\$175
CDR tail-twister extra H.D.\$225
RG-8U foam coax cable, per metre\$1.00
8-cond. rotator cable, per metre75c

ACCESSORIES

Voltage regulator 18V AC input
12V DC 3A output\$23
240/18V AC transformer\$10
5 meter RG-58U coax cable
with PL-259 one end\$2.50
Mobile bumper mounts 3/8" 24 thread\$5
Mobile gutter mounts 3/8" 24 thread\$3

KYOKUTO FM-2016A 800 channel
2 meter FM transceiver with 4-channel memory & scanner 15W\$360

TRIO-KENWOOD PRODUCTS

VFO 820 for TS 820S\$150
VFO 520 for TS 520S\$130
LF 30A low pass filter\$30
SP 120 for TS 120 series\$36
BS 8 adaptor TS 820 to SM 220\$50
DK 520 adaptor TS 520 to DG 5\$15

All further Trio-Kenwood accessories and transceivers at competitive prices

CO-AX CONNECTORS

PL-259-SO-239-cable joiners ea.75c
Right angle & T connectors, ea.\$1.50
GLP right angles RG-58U to SO-239
w/lock nut and cap, ea.\$2.50
Double female connectors, ea.80c
MLS right angles RG-58U to PL-259, ea.90c
In-line mike sockets 3 & 4 pin, ea.75c
Mike sockets 3 & 4 pin, ea.75c

YAESU MUSEN PRODUCTS

FRG-7 .5 to 30 Mhz receiver\$300

NOVICE SPECIALS — TRANSCEIVERS

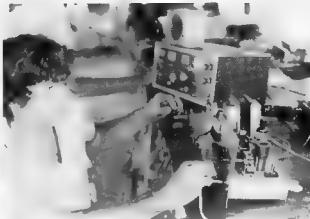
10M Sideband SE-502 USB/AM 15W PEP-240V
AC 12V DC-inbuilt SWR/RF meter 28.3-28.6 mhz-clarifier tuning transmit and receive\$90
10M Universe 224-M USB/AM 15W PEP 12V
DC 24-ch. 28.480 to 28.595 mhz, 5-khz steps-clarifier tuning transmit and receive\$100
CONVERSION CRYSTALS for amateur licence holders — set of 8-crystals to convert 23-ch. 27-mhz CB units to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-range V etc., converts as per Universe 10M above — CRYSTALS and instructions\$40

All Prices are NET, ex Springwood, NSW, on a pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or postal, excess will be refunded. Prices are subject to change without prior notice. All orders cleared on a 24-hour basis after receipt of order with payment.

Arie Bles (VK2AVA) Proprietor

Roy Lopez (VK2BRL) Manager

MORE VK/CB CLUB ACTIVITIES



Although not much information has been forthcoming from the Amateur and Citizens Radio Club (VK/CB) over recent months, nevertheless the members are still very active in the pursuit of our hobby and general public relations.

The photographs tell only part of the story, and depict another excellent example of our younger amateurs assisting interested CBers in attaining an amateur licence.

It is this sort of activity which helps to inform the public of our hobby, and the members of the club are to be congratulated for their efforts.

Wouldn't it be ideal if all of the WIA Divisions and various clubs conducted similar activities on a more regular basis?

It seems only too easy to sit back and let somebody else do most of the work.—VK3UV.

PHOTO No. 1

Garry VK2NZI (left) and Ron VK2DAE (talking) operating hand-held pedestrian or 10 metres walking down Bondi Beach Road shopping centre.

Both have worked into Europe on 10m in this way. They often help out at the weekends giving newcomers a taste of QRP DXing.

PHOTO No. 2

Did you know there are a lot of people in Kings Cross, Sydney—just looking for interesting things to do?

Members of the Amateur and Citizens Radio (VK/CB) Club found lots of interest when they set up this display at the Kings Cross fountain.

Local rangers were pleased to see such a worthwhile display at the Cross and indicated that the group would have no difficulty in obtaining a permit to conduct regular such displays at the Cross.



PHOTO No. 3

Members of the Amateur and Citizens Radio (VK/CB) Club holding a display at Bathurst, central NSW, during the flea market event which attracted hundreds to the area.

The Club also demonstrated amateur radio to those manning a CB display organised by the Bathurst CB Club.

PHOTO No. 4

Neville VK2QF, well known locally in the instructional field, met the members of the Amateur and Citizens Radio Club and set up for display a working home-built AM and CW 80 metre station at Hill-end in the Central West of NSW.



PHOTO No. 5

On the sidewalk of Bondi Beach. The Sydney amateur radio PR team in action

PHOTO No. 6

Andrew VK2VHH enjoys a nice bus trip using 2 metres FM under full call supervision.

Andrew and his friends, Chris and Dave (both looking this way), you will probably recognise helping at the amateur weekend.

PHOTOGRAPHS FOR AR

Don't keep them to yourself
SEND THEM IN — NOW

AMATEUR SATELLITES

Chas Robinson VK3ACR

OSCAR NET

The OSCAR Net organised by Peter VK4PJ is active on 3680 at 2000 EST on Sunday. There are obviously some propagation problems but no doubt these will be circumvented; perhaps by moving to an alternative band.

OSCAR INFORMATION

There has been an increasing interest in monitoring the ARRL RTTY information bulletins through WIAW and a great deal of hard and original work has gone into the necessary facilities. Alan VK2RX, Char E VK3ACR and Peter VK4PJ are all active recorders (while I'm working!) and provide me with the latest news—thanks, fellows, for your help. Also, thanks to Charlie and Peter for offering to write these notes for November and December while I am wandering around the world.

SOLAR ACTIVITY

It now appears that the high solar activity a few months ago was responsible for the change of OSCAR 8's orbital parameters which now seem to be settling down to routine once again.

The lower altitude satellites (below 1000 km or so) were the ones affected, whereas satellites such as OSCAR 7 at 1465 km continued on their predicted courses. Now you know why Skylab came down much earlier than anticipated.

OSCAR 7

Perhaps the sunspots have revitalised AO7 as several very good contacts have been made through this satellite. As in earlier years, Mode B is outstanding in its clarity and of course the 20 or more minute pass makes for a really fine QSO. The only problem is its reliability; only observation can tell you whether it is on Mode A, Mode B or just OFF. With no (or rarely) beacons for assistance, OSCAR 7 is now real fun!

Regulars on 7B include ZL1BDU, P29ZFB, VK2RX, VK3ACR, VK2ZI and VK4RF. Jim P29ZFB has been a great OSCAR operator during his residence in PNG, being active on Modes A, B and J through both OSCARS 7 and 8. He is returning home at the end of August and hopes to acquire a VK4 call. We shall be looking for you, Jim.

MODE J CLUB

Charlie VK3ACR and myself have received the most attractive Mode J Club certificate as described in last month's notes. Our awards are numbered 78 and 79, which is quite remarkable as the potential for this award in Europe and North America must be enormous—possibly Mode J is more demanding than we thought.

DUAL SATELLITE OPERATION

Every few weeks our two operating satellites are located in a position where com-

munication between them is possible for ten or so visible orbits.

During August this situation obtained and with AO7 performing well, excellent results were achieved. The procedure is to transmit on 432.15 into AO7, the 145.95 downlink from AO7 is received by AO8 and re-transmitted on 29.45 or 435.15 (the frequencies given are nominal centre frequencies of the transponder Modes A, B and J involved).

The distance between the two satellites may be between 550 km (the altitude difference) and 2000 km, and this can be predicted by somewhat complicated calculation.

This is yet another interesting facet of satellite communication.

References. Klein, P. L., and Solfer, R. "Intersatellite Communication Using the AMSAT OSCAR 6 and OSCAR 7 Radio Amateur Satellites." Proc. IEEE October 1976, p. 1526.

"Interspacecraft Distance for Satellite in Circular Orbits and Close Encounter Curves for AO7 and AO8." AMSAT Technical Note, August 1978.

Davidoff, M. "Predicting Close Encounters: OSCAR 7 and OSCAR 8." Ham Radio, July 1979, p. 82.

PHASE III COUNTDOWN No. 1

AMSAT Phase III-A is a high altitude, long lifetime satellite to be launched in March 1980 as a secondary payload aboard an Ariane mission. The European Space Agency will provide the launch opportunity from a site in Kourou, near the coast of French Guiana. The satellite will be inserted into an initial (temporary) elliptical orbit with a projected inclination of 17°, an apogee of 35,000 km and perigee of 200 km. After a few weeks in this orbit when the spacecraft has stabilized and the onboard microcomputer has determined that the satellite is in the proper orientation to the sun, to the earth, and at the proper position in its orbit, a one-shot onboard perigee kick motor will fire (a solid propellant motor that will burn for one 20-second period). This will lift the perigee to its projected final 1,500 km altitude and raise the inclination to 57°. This orbit will have a period of approximately 660 minutes and a longitude increment of about 165° west per orbit. Please note that those figures are only preliminary estimates; the final data cannot, of course, be known until precise measurements are made after launch. These figures, however, are suitable for giving the potential satellite user a sense of what the orbit will be like.

This orbit will favour the Northern Hemisphere at first, as the apogee after the perigee kick motor firing will occur

at about 26° N latitude. Over the course of the first two years, the latitude of the apogee will drift gradually northward to its highest point, 57° N latitude. From this time on the apogee will drift southward until after another year or so it will occur over the equator. From this point on, the Southern Hemisphere will be favoured and the second of the AMSAT Phase III missions will have been launched, again initially favouring the Northern Hemisphere. Throughout its lifetime, however, the AMSAT Phase III series satellites will be accessible throughout the world at some point during the day, those regions falling under the illumination at apogee will simply have greater access times.

AMSAT Phase III-A will carry a Mode B transponder. Its uplink will be in the 70 cm band and downlink in the 2 metre band. The passband will accommodate SSB, CW, SSTV, RTTY, and whatever digital modes are approved for use through the satellite. There will be several Special Service Channels that will deal exclusively with such areas as data exchange, education, scientific study, officially authorised traffic, and general interest information bulletins from throughout the world. A general beacon for routine telemetry and Codebook information, and an engineering beacon for more sophisticated management purposes will be at the very edges of the passband. To access the satellite, a user will need about 1000 watts ERP on 70 cm—but high gain antennas to achieve this effective radiated power economically are feasible as near apogee (plus or minus 3 hours) AMSAT Phase III-A will move very slowly and through a comparatively small arc; tracking will be a fairly simple task.

From Steve Place WB1EYI, AMSAT Phase III-A Education Special Service Channel Co-ordinator.



With reference to Bob VK3ZBB's article on the new Phase 3 project, further information, via Harry JATANG's newsletter, has come to hand and is as follows:

Beacons for Phase 3 spacecraft have been established. General Beacon 145.810 MHz, Engineering Beacon 145.990 MHz.

AMSAT advises that the Phase 3 Flight Ready Spacecraft has to be at the launch facility by 3rd December, 1979, and launch is still scheduled for 5th March, 1980. Checkout of the Flight Computer is being accomplished and everything thus far looks like a goer.

The Flight Transponder is coming along well and should meet schedule requirements. As of now 4,077 solar cells are in hand and 39 battery cells. Preliminary indications show we should have a very good positive power budget for the Phase 3 spacecraft. This is great news.

Preparation of back-up documentation for the WARC delegation on Amateur Satellites is under way at AMSAT and should be on schedule.

Phase 3 solar panels are undergoing thermal testing in vacuum chambers and vibration tests are completed and have proved very, very good. The wire bundle harness for the spacecraft is also progressing well and will meet schedule. The IHC prototype is in the debugging stage and all is going as expected. The 435 MHz uplink antenna is in the design and testing stage. Spacecraft modules and structure are in for the final paint process.

Biggest problem facing AMSAT at this time is the long lead time required for some space qualified components. Delivery of these items will not meet our target date. Don't give up, AMSAT is working hard to overcome these problems.

Harry JA1ANG asks — Are we ready for Phase 3-A satellite? Although we will not know for sure until about the end of November, or even later than that, "Phase 3-A" is due to be launched on March 5th, 1980, from ESA's (European Space Agency: member countries are Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Spain, Sweden, Switzerland and the United Kingdom. Austria, Canada and Norway participate as observers) launch site or Kourou, French Guiana (QTH: 5.4N/52.7W). The launch vehicle: "Ariane" — a three-stage \$888 million rocket, 154 ft. long. Launch time: Approximately 9.00 a.m. local time. FYT local time — minus 4 hours UTC. So it will be around 1300 UTC, which will correspond to our evening of March 5th, 1980.

Please Note that all information mentioned here is subject to change.

Uplink Frequency: 435.277-435.153 MHz (centre of uplink band: 435.215 MHz).

Downlink Frequency: 145.838-145.962 MHz (centre of downlink: 145.900 MHz).

ERP required when satellite is at or near apogee: Approximately 1,000W. Note: To those who have AO-7 Mode B experience, this will mean that you will need 10 dB more effective radiated power.

Strength of downlink signals: Approximately 7 dB less than those from AO7 when in Mode B.

Modes usable: A1, A3J, SSTV (using SSB) and RTTY (using A1 — either "mark" only or "space" only — ref. AO-7's RTTY (excluding 435.1 telemetry) telemetry, which is not frequency shift keyed, but "space" only "keyed").

The Phase 3-A satellite, after leaving the launch vehicle, will go into a "transfer" or "Interim" orbit. The inclination will be about 17 degrees apogee approximately 36,000 km and perigee approximately 200 km. It will stay in this "transfer" orbit for about 10 to 14 days, then the KICK MOTOR, a small rocket on board the satellite, will be fired to put the satellite into its final orbit of inclination approximately 57 degrees; apogee approximately 36,000 km; perigee approximately 1,500 km, period approximately 661 minutes (approximately 11 hours).

WARNING

While the satellite is in its Interim or "transfer" orbit all official ground stations will be reading the telemetry and will make RANGING measurements using the transponder. While this is being done, during the first 10 to 14 days, general users are warned "not to use the transponder" under any circumstances.

The above is very important, because based on these preliminary measurements, the timing the firing of the kick-motor will be determined. The kick-motor uses solid fuel, therefore it is going to be a one time only firing. In other words, they will not be able to "do it over again" (once fired, it will burn to the end — no stopping, like in the case of liquid fuel) — therefore it is essentially important that they "do it right" and to enable them to do so, a "quiet" transponder will be needed during the first 10 to 14 days after launch. So, no uplinking by general users, PLEASE!

Please listen to the beacons: one on 145.810 (which may not be on for the first several days, and the other (the ENGINEERING BEACON) on 145.990 MHz, which will be turned on as soon as the satellite becomes available to general users it will be "announced" over the general beacon on 145.810 MHz, by CODESTORE.

Also, listen to the GENERAL BULLETIN, which will be on approximately 145.965, on one of the SPECIAL SERVICE CHANNELS (SSC).

The following is the proposed "band-plan" for the satellite (keeping in mind that this could be changed: Downlink 145.838 to 145.880 MHz, CW only; 145.880 to 145.920 MHz, mixed CW and SSB; 145.920 to 145.962 MHz, SSB only; RTTY (mark only or space only, CW type) on 145.880; SSTV (using SSB) on 145.920.

The transponder passband will be approximately 150 kHz wide, BUT please refrain from using the band edges below 145.838 and above 145.962 BECAUSE there will be SSCs (Special Service Channels) reserved for bulletins, code practice, scientific, data and educational transmissions, therefore no uplinking below 435.153 and above 435.227 MHz! Incidentally, sidebands will be "inverted" as in the case of AOT's Mode B and AO8's Mode J. Thus, uplinking will be on USB, and the downlink will become LSB.

RUSSIAN SATELLITES

Information has been supplied by Bob WABERB and Miki JR1SWB, informing us that about a month ago JAMSAT's JR1WYB, who is very good at Russian, visited RS3A (formally UK3ACM) in Moscow. He learned that both RS3 and RS4 would be launched by the end of the year, and these two satellites would piggyback with certain Cosmos Satellites. So their orbit will likely be the same as RS1 and RS2. They will have Mode A trans-

ponders and downlink would be 29,400 to 29,450 for RS3 and 29,450 to 29,500 for RS4, uplink frequency is not certain. They will have sophisticated AGC system and commandable pad (attenuator) to avoid overload as was noted in RS1 and 2.

The most unique aspect of these birds is they will contain a "Robot" system, which responds to the signal of ground station. Example: When I transmit on a particular frequency, RS3 de VK3ACR K, the Robot will respond as VK3ACR de RS3 ur 579 K. No further information is known on the system, but to say the least, it's very impressive.

AWARD

(Oscar Satellite Communications Achievement Recognition)

I have just received from Colin VK5HI (AMSAT Awards Manager) a list of the VKs who have qualified and received their certificates. These awards can be obtained by those amateurs who can confirm by QSL cards two-way communication with six different VK call areas and two countries. These cards must be sent to Mr. Colin Hurst VK5HI, 8 Arndell Road, Salisbury, SA, accompanied by postage for return of cards and certificates. ZLs are also eligible. To date only 14 of these awards have been issued in VK, these being:

C. J. Hurst VK5HI, R. Galle VK5QR, G. Wiseman VK5ZAD, R. Arnold VK5ZBB, A. Downie VK4ZRF, M. Williams VK4ZIL, J. Roberts VK4TL, A. Hennessy VK2RX, A. Squires VK5ZWO, F. W. Boundy VK2ZFX, J. Beckett P29ZFB, G. Ratcliff VK5ZGC, C. H. Thorpe L40018, C. J. Robinson VK3ACR.

ORBIT PREDICTIONS — NOVEMBER 1979

OSCAR 7				OSCAR 8			
Date	Orb. No.	Eq. #	W	Date	Orb. No.	Eq. #	W
1	22692	0030	74	8444	0086	88	
2	22705	0125	89	8454	0091	88	
3	22717	0024	73	8472	0087	81	
4	22730	0118	86	8488	0102	82	
5	22742	0018	71	8500	0107	83	
6	22755	0112	85	8514	0112	84	
7	22767	0011	89	8528	0117	88	
8	22780	0105	83	8542	0122	87	
9	22792	0005	88	8556	0128	88	
10	22805	0058	82	8570	0133	79	
11	22818	0153	95	8584	0138	71	
12	22830	0053	80	8597	0000	47	
13	22843	0147	94	8611	0005	46	
14	22855	0046	78	8625	0010	49	
15	22868	0141	92	8639	0016	50	
16	22880	0040	77	8653	0020	52	
17	22893	0154	90	8667	0025	53	
18	22905	0004	75	8681	0031	54	
19	22918	0128	89	8695	0036	55	
20	22930	0027	73	8709	0041	57	
21	22943	0122	87	8723	0046	58	
22	22955	0021	72	8737	0051	59	
23	22968	0115	86	8751	0056	61	
24	22980	0015	71	8765	0101	62	
25	22993	0109	84	8779	0107	63	
26	23005	0008	69	8793	0112	65	
27	23018	0102	83	8807	0117	66	
28	23030	0002	67	8821	0122	67	
29	23043	0056	81	8835	0127	68	
30	23056	0150	95	8849	0132	70	

SUMMERLAND AMATEUR RADIO CLUB CELEBRATES LISMORE CENTENARY

1979 is a big year for Lismore, the queen city of northern New South Wales, and the home of the Summerland Amateur Radio Club.

This year is the centenary of local government in Lismore, and while celebrations have been planned to take place throughout the year, the major effort was concentrated during the week commencing 28th May, 1979. Many local organisations have participated in the celebrations, and the Summerland Amateur Radio Club decided to do its bit and at the same time achieve some good PR for Amateur Radio.

After some preliminary talks with the Lismore City Council, the Club was allotted a lecture room in the City Hall which would provide adequate security and give us sufficient room to set up a display on Amateur Radio. The project involved a great deal of preliminary planning, so we set up a sub-committee and got to work. With much help from many willing Club members, we assembled a large range of amateur gear dating from 1926 to 1979. As a result, we were able to set up a display representing a history of amateur radio from very early days to the present time. The ancient gear was complemented by a fine display of modern gear provided by our good friend Ken Ayers, the proprietor of Amateurs' Paradise, Southport.

The actual assembly of the display took place on Saturday, 28th May, 1979, when the gear was set up in historical sequence to form a continuous display around the hall. In one section we assembled an operating station under the Summerland Amateur Radio Club call sign VK2AGH. This section included fully operational HF, VHF, RTTY and ATV, with the odd micro-processor thrown in for good measure—home brew of course. The Lismore City Hall took on a new look, with numerous antenna arrays sprouting from various vantage points, and the experience gained by our WICEN group from many previous exercises really paid off in setting up this part of the display.

The official opening of the Club display took place at 0900Z on 28th May, 1979, and it was a great public success from the outset. The display was crowded on each of the week nights, and on the big day, Saturday, 2nd June, when thousands of people came to Lismore for the official celebrations throughout the day, it was necessary for Club members on the supervision roster to regulate the people admitted to the display room in order to keep the numbers in the room to manageable proportions.



PHOTOGRAPH

TOP: The Summerland display.

CENTRE: Amateurs Paradise's display.

RIGHT: Fred Herron VK2BHE, the club co-ordinator, with old and new equipment.

The result of the exercise was a tremendous boost to Amateur Radio on the North Coast of New South Wales. The Club achieved priceless publicity and great PR in the local media, as well as numerous enquiries and new applicants for our Novice classes. At the same time, the Summerland Amateur Radio Club played its part in the community effort to celebrate 100 years of local government in Lismore, one of the oldest provincial cities of the State.

Fred Herron VK2BHE, Summerland Amateur Radio Club.



VHF UHF

An expanding world

Eric Jamieson, VK6LP



Forreston, S.A. 5233

AMATEUR BAND BEACONS

Freq.	Call Sign	Location
50.001	WAMMHZ	San Diego
50.004	PY1RO	Brazil
50.010	HL8TG	Seoul *
50.023	HQ2PR	Haiti
50.025	6Y5RC	Jamaica
50.030	HC1JK	Ecuador *
50.036	LC7CGD	Alaska
50.038	ZB8PW	South Africa *
50.039	ZB2VHF	Gibraltar
50.040	ZB5LN	South Africa *
50.050	WA1BNH	Maine *
50.077	HK3J	Columbia (repeater)
50.080	TI2NA	Costa Rica
50.088	VE18IX	New Brunswick
50.091	WABJA	Los Angeles *
50.092	W7KMA	Oregon *
50.093	WA8PTA	Michigan *
50.098	K1HJZ	Arizona *
50.100	ZB8VHF	South Africa *
50.101	FO8DR	Tahiti *
50.104	KH8EQI	Pearl Harbour
50.110	K0BJM	Gum *
50.110	JD1YAA	Marcus Island *
50.110	KH8	Marshall Islands *
50.110	K08RO	Balpan *
50.110	AL7C	Alaska *
50.800	9B4CY	Cyprus
91.988	JY8PY	New Hebrides
52.100	VK8CB	Casey Base
52.200	VK8V	Darwin
52.300	VK8RT	Perth
52.400	VK8RTU	Kaigaroa
52.400	VK8RTU	Launceston
52.400	VK8V	Sydney
52.400	JAZIGY	Nagoya
52.800	ZL2VHF	Palmerston North
52.810	ZL2VHF	Mt. Clemie
52.800	VK8RTW	Waltham
52.800	VK8RT	Carnarvon
53.000	VK8VF	Mt. Lofy
144.010	VK2WI	Sydney
144.400	VK8RT	Mt. Mowbray
144.475	VK1RTA	Canberra
144.600	VK8RTW	Albury
144.800	VK8RT	Carnarvon
144.700	VK8RTG	Vermont
144.800	VK8VF	Mt. Lofy
144.900	VK8RTV	Ulverstone
145.000	VK8RTV	Perth
145.100	ZL2VHF	Auckland
145.180	ZL2VHF	Wellington
145.200	ZL2VHF	Wellington
145.280	ZL2VHF	Manawatu
145.300	ZL2VHF	Christchurch
145.400	ZL4VHF	Dunedin
432.400	VK8RB	Brisbane
432.475	VK8RTW	Ulverstone
433.000	ZL2VHF	Wellington †
432.100	ZL2VHF	Auckland †
432.150	ZL2VHF	Waikato †
432.200	ZL2VHF	Christchurch †
432.250	ZL2VHF	Manawatu †
10370	ZL2VHF	Wellington †

* Denotes extended operation
† Denotes net listing

In response to a request from Lytle VK2ALU, the New Zealand and 433 MHz and 10 GHz beacons have been included again. Lytle heard ZL2VHF on 433.250 MHz earlier this year, and points out it should be possible to hear some of these beacons when conditions are suitable, particularly from VK2. 3 and 4. No real objections are raised to their inclusion—they were dropped some time ago because most appeared to be solely for local reception rather than anything across the Tasman,

most running low power with directional antennas. However, as anything seems possible at times these days they are included for your continuing interest.

The ZL1VHF beacon on 433.150 uses an omnidirectional antenna with 10 watts, and is reasonably well situated. Tom ZL1THG advises there have been some improvements to 433 MHz gear in New Zealand since the big trans-Tasman opening this year, and in his case runs 50 to 100 watts and he and ZL1GJD are keen to work VK. Other stations with a reasonable set-up include ZL1TAB, ZL1TFZ, ZL1TKU, ZL2TVT, ZL2TFJ (100W), ZL2TAL, ZL2BW, ZL2BOG, ZL3AAD, ZL3AR and ZL3AQ.

So there you have it—there are stations in ZL prepared to do something about contacting VK. It is to be hoped there are similar stations in VK, and that everything will not be left to chance!

10 GHz ACTIVITY

Lytle VK2ALU in his letter reports his main activity is now taking place on 10 GHz, whilst further activity is undertaken to get the 432 MHz EME installation in Dapto shifted.

A test on 10 GHz was made on 25-8 between VK2ALU and VK2AHC over a distance of 112 km from Mr Gibraltar near Bowral and Terrey Hills, north of Sydney. Very solid signals were received at both ends using 10 GHz voice communication. A 2 metre lagoon line was used, but signals on 3 cm were as loud if not louder than on 2 metres.

A fixed attenuator had to be placed in the IF channel at ZL2ALU and to bring the 5 meter pointer "off the stop".

A pleasing feature was the accuracy of pointing at 2ALU's end, with the compass directed positioning being "spot on". VK2AHC was able to reduce to his 15 inch diameter dish without much degradation of signal strength. This was the first over any distance for VK2ALU's new portable transceiver. More difficult paths are now under consideration.

The Propagator

6 METRES AS SEEN FROM SA

It would seem that local DX to the lower placed States has not really receded ahead after the big start on 25-8, and that VK4 opening led to 4-8 from 0900 to 0645Z to JAT and JAZ. Some asserted 50 MHz activity also but only JA Perth stations started with some good early evening TE on 6-9 with VK8WD, etc. They have had several JA openings since Northern areas of VK6, VK2, VK4 and VK8 have had consistent openings for about 6 weeks, but the poor E conditions have kept out the possibility of extensions. Afternoon TE is still poor across Australia, some change should come early October.

Generally the solar flux has peaked over 215 in recent days, so long distance F layer could be the next area. On 23-9 MUF to Central America was determined to be at or above 48.1 MHz from 2350 to 0055Z. At said frequency, a repeater output was heard peaking in excess of 5 U of Most of it, apparently, is still cycloped. Also CW identified as "VPS" appeared on 44.250 MHz. Several other signals were received within the range and identified from earlier openings in April/Times and stations all corresponded to those heard between April 2 and 17 of this year. No reported hearings on 50 MHz from VK3 and VK5. For some time now 39 to 40 MHz police transmissions from the USA have been appearing around 2100Z and disappearing around 0300Z. Highest MUF to there, so far, is about 42 MHz to VK5. VK video has been received in W6 many times but nothing to 50 MHz. One further point about 23-8, JASCMO worked several LU stations on 50 MHz about 0100Z.

OVERSEAS

Generally with the increase in countries available things have not been dull overseas. If you live in JA then just recently you could have worked the following: VK4, VK6, VK8, P29, K6Z, K8R, K8H, W44, Y8, F04, K6L, J01, S81, A35 and 3D2, a total of 14 countries and only from the Pacific area.

NSDX has had a successful DXpedition so far to SW1 and A35. As 5W1CF he worked at least JA, VK8 and Y8 up to 17-8. As A35DX he has worked JA at least but quite a few missed out from

other areas. A month later would have been propagation to W, etc. To the Caroline Islands K6IN (JA1NVG) heard 5W1CF on an IC802 and whip. Also from Ponape he worked many JAs. Also K6GP and K6CW active but only seem to work JAs. News also comes that K9PNT/DJ2 can now operate on 52 MHz with an FT802 and home brew quad antenna. HS1WR has been working very consistently to JA, K6S around 1500 and 1600Z. Some late afternoon openings also, most times 50.135 MHz is used. FO8DR was heard recently (28-8) in Japan. KX6S appears to be WA5CXE/KX6. Any confirmations?

A rumour is about that VL2RM doesn't really have a 6 metre allocation and has ceased operation. Anyone to confirm? From Liberia there seems to be some 6 metre activity. K1SP is heading towards Asia around 0600 to 0700 on 50 MHz. YJ8PD recently scored KC5Z (C502 and whip) and 5W1CF on 14-9. Also KX8BU heard up north calling CQ on 14-9 on 52.050 CW. And news from V88KH in Hong Kong—he will be taking delivery of the new Microwave Mod. as 6 metre transmitter soon General allocation on V88 as 50.050 to 51.150 MHz plus spot allocations on 50.020 CW and 52.100 SSB. It will be interesting to see how the new transmitter goes when it arrives in Australia. And the ZLs will soon know, either way, whether they will have a temporary 50 MHz allocation. The announcement will have been made long before you read this. And finally Lord Howe Island activity over 2700 on 27-8. On 31-10, when a DXpedition led by Steve VK3OT with VK28YX/ATZ following. Bill late to press but at least the CQ WW DX phone contest will get a blast. Should be prime time for USA QX though. QSLs to VK3OT.

NEW BEACON FOR VK6

It has been advised a new VK5 beacon is ready for use and will hopefully be on in October. Already it has been running under temporary conditions and looks to be quite promising. Call sign has not been allocated but may be VK5RTS. Following are the details. Transmit frequency 52.150 MHz with 800 Hz PSK (upshift on keying). Power of output is 12 watts RMS. At present it will run with 6 elements at about 12 metres with initial beam heading of 85°T for the present equinox. A separate PA stage is under development and this is aimed at giving power in the region of 50 watts. Combined with the beam and assured take-off the system will have an ERP on 52.150 of 800 watts. It is possible that at a later date other selectable beam/beam programmes or programmable beam headings will be installed to complete the beacon. Any details of other "ERP" beacons would be appreciated. It would seem with low angle F layer, if you don't have a Ch. C nearby, then relying on beacons with low ERP isn't good enough. Anybody's band conditions via backscatter of layers is also possible with suitable ERP. The location of the new VK5 beacon has not been disclosed at the writing, but it has been heard loud and clear at the VK5LP establishment.

I thank David VK5KK for helping to fill in the blanks of the VK5 news, especially during the day-time hours when I am not home. . . 6LP

432 MHz AGAIN

As reported last month, the 432 MHz record has been taken out of the hands of VK8XY and VK3QZV by the contact made between mainland USA and Hawaii. Also I reported Graham VK8GB was starting to try to cover the distance between Darwin and Japan on 432 MHz. The next exciting how we can see would be for Aub VK8XY or someone in VK8 to work into New Zealand which is probably not impossible but would require a chain of correct conditions and circumstances which do not occur very often—note the severe attenuation of signals outside of a relatively narrow beam width for the contacts earlier this year between VK8 and ZL. The present record when confirmed will stand around 4000 km.

NEW HEBRIDES

The special amplifier-driver built by David VK5KK was sent to Peter YJ8PD on 17-9 to allow him to drive his 5-2002 amplifier to 500 watts or so. So far no reports at time of writing as to how it may be operating, but I am sure Peter will soon

be making good use of the amplifier in talking to Peter on 20 metres (?) he informs me KH6EQI beacon is often audible around 8000Z at S9 and for up to 3 or 4 hours at a time! He also advises working many JAs on FM, and that both 3D2AZ and 3D2GM are operating on 5 metres. The YJ8PV beacon on S1 999 has a vertical J beam, and as reported earlier is to be shifted north to Peter's QTH and will be heard off when Peter is operating on 5 metres in an effort to reduce the amount of "kurd" on the band. Other contacts from New Hebrides on a regular basis on 6 metres are to JA and KH8, although coconuts raining on to the roof of Peter's shack at times raise the level of background noise, as I was able to hear when it's time to him recently!

IT'S TEN YEARS NOW . . .

That's right, with this issue I have completed ten years of reporting VHF/UHF activities in "Amateur Radio". Whilst there is nothing particularly marvellous about that, a lot of things have happened in that period, and with the Editor's kind permission I hope soon to be able to bring you a special article on the highlights I've seen over that period of reporting and believe me, there have been quite a few.

Most of all I want to thank my many friends who over the years have consistently supported my efforts, both with information and words of encouragement, but more on that later. I also thank the various Editors of AR in that period — I feel they have been very good to me, giving me a virtual free hand in the publication of material, and for that I am indeed grateful.

So this is a decade gone by for a truly dedicated VHF/UHF operator and that's what I really am, and I enjoy being such, and have tried and will continue to try to do everything possible to extend the interests of activities on those various bands in the future, whether I am writing these notes or not.

THIRTEEN ELEMENT BEAMS

From time to time I am being asked about the pair of 13 element beams I have built for two metres. That I ever needed to build them was brought about by the crash of my pair of 18 element beams some time ago due to the breaking of a guy wire on the crank-up tower. Whilst wondering what would be the best approach to the problem of reconstruction, Bob Stone VK3BP came back from USA with a pair of reports of a newly developed KLM type yagi of 13 elements, the performance of which was equal to or slightly better than the former 18 elements. Having nothing to lose, I built a pair of them.

There is no doubt about it, they really do work and work well. At first when number one was built and pointed up in the air from a ladder as a platform for checking SWR I gave a rather poor result. It was thought that changes to the element lengths would be necessary, with the forward element of the driver pair having the most effect on the SWR. It was found they needed to be lengthened!

The following week the antenna was mounted on the step ladder again this time with the ladder slightly more upright, and it was found the SWR was really good. Wondering what I had done differently, came to the conclusion that the week before the SWR bridge had been within the plane of the element owing to the slightly larger than usual slope of the antenna. Now with the bridge out of that area the SWR was excellent, being better than 1.05 to 1 up to 144 to 147 MHz and a rise to 1.1 to 1 up to 148 MHz. And that's a wider bandwidth than the original design seemed to indicate. The second antenna was now placed in the best position with exactly identical results. The next paragraph gives you a brief outline of the various parameters.

Booms extend 21 ft 10 in., diameter 1-5/8 in., elements 3/8 in., two driven elements, phasing straps 1/8 in. wide, stacking distance 13 to 14 feet vertically feedpoint 20 ohms balanced, and required 4 to 1 balun to match 50 ohm coax. Two stacked vertically as indicated should give 17.5 to 18 dB gain. Bandwidth 144 to 148 MHz with SWR 1.1 to 1.2 or better although the original design said optimum performance was from 144 to 145 MHz. There are a few critical factors in their construction.

structure as with most of the KLM type designs which are only reproducible in performance with extreme care, if you are a sloppy builder then don't start building one!

As you need the full information to make one or two as required I am prepared to make the information available to anyone interested who sends a stamped addressed envelope, preferably of the 8 in. x 4 in. standard envelope to save excessive folding of the paper, plus a 20c stamp to cover the cost of copying.

CLOSURE

As other writers of similar columns are finding, news is still scarce due to band conditions, but hopefully matters will improve for next month's copy, as this will cover the equinoctial period. So until then good DXing to everybody, and please take off a little time to write and tell me what you have worked.

Closing with the thought for the month: "To be agreeable in society, you must consent to be taught many things that you already know."

73. The Voice in the Hills.

LATE NEWS

T12 STATIONS FOR 6m

Carlos T12CF, in Costa Rica, expects to be operational on 6m in late Christmas 1978. Equipment on order is an FT901 with 3 band transmitter and a 100W output linear into a 7 element KLM beam. He has been briefed on VK TV frequencies, VK 6m frequencies and the 28.885 MHz net. T12CF also expects to be operational with the same gear (without the linear) around Christmas.

SMIRK

SMIRK membership is open to all keen 6 metre operators who may join by filling details of three DX 6 metre contacts. With 6 metres opening to Japan, this is very simple. The list, together with \$4 US should be sent to the Secretary of SMIRK, Ray Clark K5ZMS, at 7158 Stonefield Drive, San Antonio, Texas, USA, 78227. You will then receive by return airmail your SMIRK membership certificate.

SMIRK print a quarterly newsletter which is full of information about 6 metre activity. To receive this newsletter send with your membership some envelopes which are big enough for three or four sheets of foolscap and enclose for each envelope \$1 US for postage. This is pretty good value for members of SMIRK.

From the latest newsletter come the following extracts of the results of the SMIRK Party Contest and the updated membership list.

5th Annual SMIRK Party Contest Overall winner Gary Fray W6XJ.

The winning score was 22,720 points. Well done, Gary.

New Hebrides, YJ8OT, 58 points.
Australia — Victoria, VK3AUI, 5 points, VK3NM, 3 points, South Australia, VK5KK, 13 points, VK5LP, 7 points.

It certainly helps to have some good openings. Top scorers in each call area have received a certificate.

SMIRK LIST — UPDATE

AMERICA

J1KDDU 3395
J1K1KD 3362
J1K1PDY 3353
J1K1PPI 3354
J1LMMX 3387
J1LTHX 3339
J1R1SV 3284
J1ZVJH 3223
J2EJLK 3386
J2JDEJ 3390
J3K1YDZ 3359
J3RBPV 3394
J3RBUJ 3394
J3FXAA 3293
J3FXAZ 3279
J3GALJ 3280
J3G8BG 3281
J3G8BR 3280
J3G8CQ 3337
J3G8CYV 3282
J3G8SS* 3172

JG3ES* 3336
JG3JVC 3299
JG3JUC 3293
JG3KZO 3284
JG3WXB 3278
JG3WCO 3297
JG3FDR 3231
JG3RSD 3235
JG3LDA 3349
JG3SYN 3349
JG3WJER 3262
JG3BXC 3342
JG3BFA 3346
JG3GVC 3361
JG3JLY 3303
JG3BRK 3345
JG3RVC 3340
JG3RVD 3344
JG3RBN 3341
JG3RYL 3274

NEW ZEALAND

ZL4LV 3377

AUSTRALIA

VK2ZDI 3161
VK2ZDY 3166
VK2ZRU 3351
VK3BMV 3302
VK3YFU 3288
VK3YLD 3301

OTHER

HS1WR 3311
KH8JHM 3400

KX8BU 3276

Plus many others in the USA, Central and South America and Europe.

The list is an update of new SMIRK members from 5th May, 1978 to 25th August, 1979.

As listed by SMIRK

List courtesy of Lionel VK3NM, SM RK 3067

INTRUDER WATCH

All Chandler, VK3LG

A LAST MINUTE APPEAL

DO you want to see your Intruder Watch collapse? As far back as June this year I intimated that, because of growing commitments at home, I will have to relinquish my position as Federal Intruder Watch Co-ordinator.

The months since have worsened and it is vitally necessary for me to do so as at 31st December.

So far nobody has come forth to take my place. There are over seven and a half thousand members in the WIA so surely one out of that number could find the time and the dedication to take on the job. It is a reflection of the apathy of members don't you think? I have intimated that I would help and instruct my replacement in the initial stages, and also carry on the dubbing of the WA identification tapes. I shall also keep operating the IARU Region 3 co-ordination.

PLEASE, WILL SOMEBODY RELIEVE ME?

Alf Chandler VK3LC

INTERNATIONAL NEWS

WARC 79

Commenced 24th September. Scheduled to finish 30th November. 147 countries expected to send delegations and 38 international organisations will be sending observers. The total number of people will be well over 1,700. Some 14,000 proposals were received from 10 member countries to revise or modify the Radio Regulations.

KES

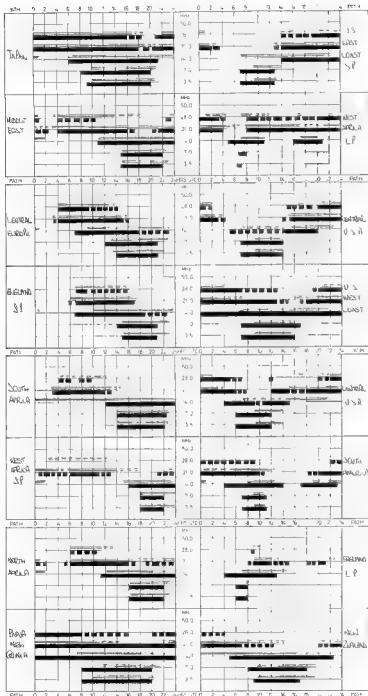
After an report in August 1979 World Radio says that the end of September the Canal Zone ceases to be a separate country. All K25 operators will have to qualify for an HPI licence to stay on the air.

ILLEGAL OPERATIONS

A feature article by NXX in CQ for September 1979, reports that the illegal use of high-powered equipment on frequencies in, and around, the citizens band has grown significantly in recent years (in the USA). Attention was drawn to so-called "HF" operators between 27.41 and 28 MHz. In both cases the illegal operators were attributed to the easy availability of amateur-type equipment to the public. The article states that operators of this nature are expected to increase with an ever growing number shifting to the 10m amateur band.

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



LEGEND

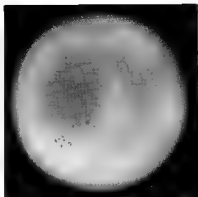
FROM WESTERN AUSTRALIA
FROM EASTERN AUSTRALIA

BETTER THAN 50% OF THE MONTH BUT
NOT EVERYDAY

BSS THAN 50% OF THE MONTH

ALL TIMES IN FIRST, UTC (GMT)

PREDICTIONS COURTESY IPS SYDNEY



Sunspots visible 0436 UTC, 30th September, 1979. Photo by G. Sprott.

STOP PRESS

IPS Daily Report
Phone (02) 269 8614
Details in December AR.

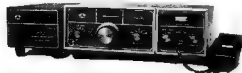
PROJECT ASERT - PROGRESS REPORT

In preparation for the forthcoming VHF propagation activity the Project ASERT Committee has taken steps to introduce four additional monitoring stations in New South Wales, Queensland and New Zealand. It is hoped that these stations will be operating during November, thus providing data throughout the summer period of high VHF activity. The three existing monitoring stations located in Tasmania, South Australia and Victoria have been producing information throughout the winter period and this is currently being analysed by the Committee. A detailed report on the results during the winter period will be published in "Amateur Radio" in the near future.

The Committee again expresses its appreciation to members of the Institute who are supporting the Project through construction of equipment and surveillance of the monitoring stations.



Les Janes VK3BKF installs a 2m antenna at Port Melbourne for Project ASERT.



ATLAS 110 LINE

First came the receiver The Atlas Rx 110. A performance plus Amateur Band Receiver incorporating high sensitivity, selectivity and dynamic range. Coupled that to a "bolt on" Transmitter Module, the Atlas TX-1104, which has low spurious and harmonic radiation, high carrier and unwanted sideband rejection and 250 Watts m-pu. You now have the unbelievable Atlas RX/TX 110/H top performance transceiver which costs NOT \$950 NOT \$750 NOT even \$650 but just **\$555**

For color brochure with complete specifications write to us, phone us or just drop in and have a look at the RX/TX 110



ATLAS
RADIO INC

TRANSCIVER OF THE DECADE

NEW
215XLE
LIMITED
EDITION



- 80-100 METRE
- 250 WATTS

- SEMIBREAK-IN CW
- BUILT IN SILENCE

Includes all the outstanding features of 215X plus now 250 Watts Input, new RIT control and update frontpanel design

- 215XLE Transceiver \$750.00 ■ 250W Ant. (incl. P.S.) \$170.00 ■ 210V Transceiver \$750.00 ■ 200PS Power Supply 1.80.00 ■ DDB-4 Dig. Mt. Readout Counter \$245.00 ■ VX SW Vco \$780.00 ■ MT 1 Matching Transformer \$44.00
- DMK Plug Mobile Mount \$62.00 ■ 10x1 Crystal Control Adapter \$78.00
- DCC Power Cable Kit \$14.00 ■ MSB Mob. to Bracket Kit \$4.00 ■ DL 300 200W Dummy Load \$32.00

GFS FOR RECEIVERS

STANDARD C-6500.....\$359.

HF Wadley Loop Communications Receiver.

Manufactured by Marantz Japan the C-6500 is a state-of-the-art HF receiver covering 0.5-30 MHz in 30 x 1 MHz band segments. Its sensitivity is extremely high at 0.5uV and selectivity is 4 KHz on ISSB and 7 KHz on AM



J.L.L. SX-100 16 CHANNELS VHF/UHF
SCANNING RECEIVER.....Price \$407.

Still the best value in Programmable Scanners, the SX-100 covers the 6.2 and 70 cms Amateur Bands plus over 32,000 other Frequencies including Channel O and Channel SA TV Sound

Amateurs can use the SX-100 to monitor band conditions using Beeps and Al. Program can keep informed by listening to Indragrade frequencies. CB are can monitor UHF CB Channels. Fishermen can monitor VHF engine and Emergency frequencies. Servicemen can use the SX-100 to check virtually any commercial two-way frequency with its 32,000 channel coverage

- Cover 80-94 140-180, 410-514 MHz
- 5KHz Channel Spacing
- Built in Digital Clock & Date
- 240V A/C and 12V DC operated
- Frequencies are programmed using built-in keyboard.

SKY ACE R-517...\$104.

The monitoring of aircraft communications has long been a requirement for emergency service organizations, flying schools and clubs. Aircraft operators, aviators themselves as well as a band of communications enthusiasts. GFS has a range of aircraft receivers that should suit all these requirements

Designed for the enthusiast, the R-517 is a Palm Sized Receiver which features Full 118-144 MHz Tuning plus the 3 Crystal Locked Channels.

- Active Inbuilt ACC System
- Excellent Selectivity
- High Sensitivity
- Built in Telescopic Antenna
- VFO main tuning with FINE control and 3 crystal channels

NEW! COMNI R-1010 AIRBAND RECEIVER. The R-1010 is a Professional Receiver that uses frequency synthesis thus giving the following outstanding performance.....\$529.

- Frequency range 108-138.075 MHz
- Change, Spacing 25 KHz
- Digital Frequency Readout
- 12 VDC or 240 VAC operated.
- Co Axial Channel Selector
- Squelch and IF Noise Blanker
- Weight 3 Kg. Size 16 cms x 5.6 cms x 25 cms

SCANNER BASE ANTENNAS

Scan-A-65 520 MHz 3dB Gain \$35.00
GD-X-1 85-480 MHz Heavy duty \$80.00

Write for a comprehensive price list and Catalogue of the complete GFS Product Range Trade Enquiries Welcome



NEW PRODUCTS FROM MFW

Now a very wide range of Antenna Tuners

- MF-964 30W Ant. coupler/Dual Meter type SWR/Power Meter Co-Ax Swch for Bal and Un Bal Line Inc. Balun \$419.00
- MF-982 30W Ant. coupler/SWR/Power Meter Co-Ax Swch for Bal and Un Bal Line Inc. Balun \$279.00
- MF-982 15W Ant. coupler/SWR/Power Meter 6 Pos. Co-Ax SW for Bal and Un Bal Line Inc. Balun \$233.00
- MF-981 15W Ant. coupler/6 Pos Co-Ax SW for Bal and Un Bal Line Inc. Balun \$199.00
- MF-949 300W Ant. coupler/SWR/Power Meter 200W Dummy Load/Co-Ax SW for Bal and Un Bal Line Inc. Balun \$118.00
- MF-948 300W Ant. coupler/SWR/Power Meter Co-Ax SW for Bal and Un Bal Line Inc. Balun \$145.00
- MF-943 300W Ant. coupler for Bal and Un Bal Line Inc. Balun \$115.00
- MF-901 200W Ant. coupler for Bal and Un Bal Line Inc. Balun \$87.00
- MF-900 200W Ant. coupler for Unbal Line (No Balun) \$63.00

- MF-752 Dual TUNABLE ACTIVE SSB/SDV FILTER inc Peak Noise, Noise Levelers and Two Variable Frequency Filters \$145.00
- MF-751 Tunable Active SSB/SDV Filter \$115.00

Electronic Keys

- MF-481 THE GRANDMASTER MEMORY KEYS stores 2 x 50 character messages @ 50 WPM \$145.00
- MF-482 Echo Keyer built in Paddle, Memory and Speed control. @ 50 WPM send store keying \$83.00

Non-Resonant

- MF-500B1 Super Logarithmic speech processor 300dB dynamic range and 3 Active Filters \$87.00
- MF-502 Antenna Noise Bridge, wide range 0-250 Ohms 1.50 p.p.s.c. 1.00Watt \$63.00
- MF-100B 100-100MHz Precision 25dB gain \$63.00

-ANNOUNCEMENT-
TEN METRE OPERATORS.
NOW ENJOY FM OPERATION
WITH THE
COMTRONIX FM-80

Enjoy the thrill of FM operation that has been so popular amongst 2 Metre operators for years, but with the advantages of being able to work ON AIRSSEAS DX 10 metre FM is very popular in the U.S with over 70 repeaters already operating! With the FM 80 you have the choice of 80 10KHz spaced channels 28.175 MHz. 70KHz can easily be changed to 38.175 MHz 2400 MHz power output is 10-15 Watts deviation is +3KHz receiver sensitivity is 0.5uV for 20dB quieting

Don't miss out on experiencing this exciting new form of communication. Call or write to us for your FM 80 now

SPECIAL INTRODUCTORY PRICE \$289.

SPECIAL ON CALLBOOKS WHILE STOCKS REMAIN
\$35.00 \$20.00 P&P
\$37.50 \$22.00 P&P
A15 Callbook
Foreign Callbook

NOW COMBINE
AMATEUR RADIO &
COMPUTERS.

SWITZ

GFS are now Victorian Distributors for SOUTH WEST TECHNICAL PRODUCTS (SWTP). Manufacturers of Personal & Small Business Computer Systems. Contact us for more information on their new 6809 low priced high performance computing system.

TET SWISS QUADS



This antenna is a PHASED QUAD and well known as a HSBV QUAD its concept is to drive the Reflector and Reflector at the same time with phase difference to obtain more gain and better front-to-back ratio than the conventional quad.

- 2x 22.2m x 2 Stacked 14dB Gain \$99
- 2x 24.2m x 4 Stacked 16dB Gain \$216
- 2x 24.2m x 4 Standard 12dB Gain \$119
- 1x 10.1m x Standard 12dB Gain \$156
- 1x 15.15m x Standard 12dB Gain \$169
- 2x 20M 20m x loaded 10dB Gain PDA

ATN ANTENNAS
Write to us for a catalogue and price list on ATN's large range of VHF/UHF & HF antennas.

DSI COUNTERS
GFS are Melbourne agents for the comprehensive range of DSI FREQUENCY COUNTERS. Drop us a line or just give us a call for your DSI counter.

Install your own tower and save \$55+ with the G20/20 20' Transangel Tall Tower fully self supporting \$74.00.

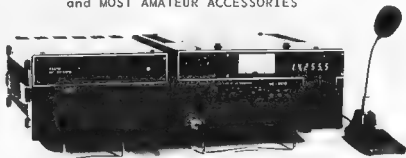
G.F.S. ELECTRONIC IMPORTS

15 McKEON ROAD, MITCHAM, 3132. (03) 873 3939

Supplying the Enthusiast . . .

SELECTIVE RANGE OF AMATEUR EQUIPMENT

POPULAR BRANDS OF H.F. & V.H.F. TRANSCEIVERS, ANTENNAE, ROTATORS
and MOST AMATEUR ACCESSORIES



SALES AND SERVICE

graham e. stallard

27 WHITE AVE. LOCKLEYS 5032
SOUTH AUSTRALIA PHONE 43 7981

VICOM DISTRIBUTOR FOR SOUTH AUSTRALIA

Please Phone, Call or Write for your requirements

AMATEUR RADIO ACTION

IS THE NEW GENERATION AMATEUR MAGAZINE

SUBSCRIBE NOW!

DON'T MISS OUT on your copy of Amateur Radio Action. There's only one way to be really sure that you will receive each and every copy of Amateur Radio Action — and that's by enrolling on our subscription lists.

Simply fill out the coupon below, enclose a cheque/money order/postal order for \$14.40 and you will be put on our subscription list to receive the next 12 copies of AMATEUR RADIO ACTION through the post (check airmail rates below).



Please put me down for 12 editions of Amateur Radio Action, starting NOW!

RATES: Within Australia: \$14.40. Surface mail overseas: \$18.40.

AIR MAIL: To New Zealand \$A28.70; Malaysia: \$A32.60; Japan: \$A38.45; USA: \$A42.35; UK: \$A46.25.

Herewith enclosed cheque/postal note/money order to the value of: \$

Name

Address

Postcode

Post to: Amateur Radio Action Subscriptions, Box 628E, Melbourne 3001.

MORE GOOD NEWS ABOUT NEW GEAR — FROM VICOM

KENWOOD R-1000 COMMUNICATIONS RECEIVER

200 KHz-30 MHz

\$485



ICOM IC211

2m transceiver

- 144 to 148 MHz coverage • Modes SSB CW FM • SI synthesizer PLL
- 4-digit LED readout • Pulse-type noise blanker • VOX w/adjustable gain • SWR bridge • CW monitor
- Automatic power control • AC/DC power supplies • Antenna impedance 50 ohms unbalanced • TX output 10W PEP



\$847

OVER 2,100 SOLD!

Yes, more than 2,000 22S have been sold in Australia
Surely a mark of success for this superb rig



IC22S 2MFM STILL \$299

800CH TRANSCEIVER

- handheld —
- 1.5w output
- 144-148 MHz
- 800 chs, 5 KHz steps
- 800 KHz Repeater offset
- Supplied with SEC approved charger
- 90 day VICOM warranty

PRICE: NOW \$355



Daiwa Low Pass Filters

FD30LS 32 MHz, Fc 200 w, 3 stages — \$20.00

Baluns

- AS-BL Asht 50 ohm for beams — \$34.00
- LS-50A 50 ohm, 4 KW 1:1 for dipoles — \$32.00
- BL70A 70 ohm, 4 KW, 1:1 for dipoles — \$32.00

Leader Test Equipment

- JAC 895 Antenna Coupler 3.5 — 28 MHz — \$182
- LPM 885 SWR/PWR Meter — \$97
- LPM 880 RF Power Meter — \$139
- LDM 815 TR Dip Meter — \$89.00
- LBO 310 3" Ham Oscilloscope — \$330
- LA 31 Ham monitor scope adapter — \$26.00

Radio Teletype Terminal

O-7000 Tono RITY CW/Baudot/ASCII — \$839

Tubes

- 6KD6 Final for Yaesu linears — \$9.00
- 6JS6C Final for Yaesu transceiver — \$9.00
- 12BY7A Driver — \$3.75
- 6146B Final — \$12.00

CW Filters

- FT101E Yaesu — \$39.00
- TS520S YG3395 Kenwood — \$57.00
- TS620S YG88C Kenwood — \$59.00

Morse Keys

- HK702 Deluxe Key with marble base — \$41.00
- HK708 Economy Key — \$23.00
- HK706 Operator's Key — \$25.00
- MK701 Manipulator (side-swiper) — \$45.00
- PALOMAR 1C Keyer — \$149.00

Jaybeam Antennas

- 5Y/2m 5el 2m, 7.8 dBi gain, length 1.6 m — \$43.00
- 8Y/2m 8el 2m, 9.5 dBi gain, length 2.8 m — \$51.00
- 10Y/2m 10el 2m, 11.4 dBi gain, length 4.4 m — \$84.00
- 10X/2m 10el 2m, cross yagi, 11.3 dBi — \$114.00
- D8/70cm Twin 8el, 70 cm, 12.3 dBi, 1.1 m — \$64.00
- PBM 18/70 18 el, 70 cm, 14.9 dBi, 2.8 m — \$96.00
- MBM 48/70 48el, 70 cm, 15.7 dBi, 183 cm — \$83.00
- MBM 88/70 88el, 70 cm, 18.5 dBi, 398 m — \$105.00
- PMH2C Phasing harness — \$20.00
- 8X/2m 2m cross yagi, 8el, 9.5 dBi, 2.8 m — \$99.00
- 12X/70 cm 70 cm cross yagi, 12el, 13.0 dBi, 2.6 m — \$139.00

Parabolic Dishes

PBA 1200 70 cm and 12 GHz complete — \$349.00

Rak Antennas

- AL24DXN 20-40 m trap dipole — \$70.00
- AAVFN 40 m dipole kit — \$27.00
- LISTER 3 Short wave Rx antenna — \$49.00
- LISTER 1 Short wave Rx antenna — \$22.00

Nagara

- SS56 6 m 5el beam 1 KW — \$159.00
- VSJR 80-10 m trap vertical, 6.7 m high — \$129.00
- V4JR 40-10 m trap vertical, 5.2 m high — \$99.00

Hy-Gain Antennas

- HYQUAD 10/15/20 m, 2 element quad — \$279.00
- 204BA 4 el monobander for 20 m — \$259.00
- TH6DX 6 el tribander — \$310.00
- TH3MK3 10/15/20 m 3 el beam — \$249.00
- TH3JR 10/15/20 m 3 el beam — \$229.00
- 203BA 3 el beam 20 m — \$199.00

LONG JOHN 5 el wide spaced 27/28 MHz — \$180.00

Scalar

- M22T 1/4 wave 2 m mobile whip, top only Qty 1-4 — \$7.00
- M25T 5/8 wave 2 m mobile whip, top only Qty 1-4 — \$14.00

BASE

B/L for above — \$4.00

ICOM Gear

- IC701 transceiver NOW — \$1199.00
- IC22S 2m transceiver — \$299.00
- IC551 6m transceiver — \$799.00
- IC280 2m fm remotable — \$450.00
- IC502 6m ssb portable — \$239.00
- IC202S 2m, ssb portable — \$318.00
- IC211 2m all mode — \$847.00
- ICRM3 Remote control unit — \$159.00

Microphones

VM-1 noise cancelling, hand ptt, low z — \$10.00

Coaxial Cable

- RG58AU mini spec, 30m reels — \$13.00
- RG213/L mini spec, per metre — \$1.40

Kenwood Transceivers

- TS520S HF transceiver — \$635
- TS120S Solid state 100w — \$735.00
- TS120V Solid state 10W — \$600.00
- TS180S Solid state 10W — \$1240.00

Call us today for a good deal.

Monitor Receivers

- 747 Vicom Aircraft Scanner — \$199.00
- 210 Bearcat 210, scanner — \$469.00
- HF12 WHF pocket 12 channels — \$149.00

VICOM

Duncan Baxter VK3JZ
Customer Service Manager

Perth 321 3047
Newcastle 69 1222

Vicom

68 Eastern Road,
South Melbourne,
Victoria, 3206
(03) 699 6700

Launceston 44 3882
Brisbane 38 4480
Adelaide 272 8417
Kalgoorlie 21 1906
Wilmington (NZ) 287 946
Wagga 21 2125

Sydney 635 6399 Gold Coast 32 2644
Adelaide 43 7981 Geelong 78 9660
Rockhampton 28 2843 Melbourne 836 8635
Brisbane 48 6601
Townsville 72 2633

CUSTOM COMMUNICATIONS

SHOP 11, PARRAMATTA ARCADE,
CNR. CHURCH & DARCY STREETS,
PARRAMATTA, N.S.W. 2150.

TEL: 635 6399
A/H: 607 9168



"NEW" 10-80 MTR. VERTICAL ANTENNA. ONLY \$75
2 MTR. 7/8 WAVE MOBILE WHIP. Including
BASE LEAD \$32 5/8 WHIP Included \$28

ICOM Gear
IC701 HF solid-state 160 m — \$1880.00
10 m transceiver
Matching power supply/rectifier for above — \$253.00
2 m FM synthesized — \$289.00
IC205 2 m FM synthesised auto controlled — \$480.00
IC280 2 m FM portable 100 channels — \$239.00
IC215 2 m FM portable 100 channels — \$239.00
IC402 70 cm auto portable 3 watts — \$439.00
IC502 6 m auto portable 3 watts — \$239.00
IC209 2 m auto portable 3 watts — \$244.00
IC211 2 m all-mode auto transceiver — \$399.00
ICM43 Remote control unit — \$189.00
ICSM2 Condenser electret desk mic — \$45.00
Speech Compressors & Processors (Daisis)
PF600 Phrasing type dc 6db gain — \$109.00
PF440 Phrasing type ac/dc 6db gain — \$129.00
PF550 Filter type ac/dc 6db gain — \$159.00
NC330 Speech compressor — \$99.00

Microphones
JH-1 Noise canceling hand ptt dynamic low Z — \$10.00

Antenna Couplers
CW174 Delta 1.9 — 28 MHz 500 W pwp — \$159.00
CW175 Delta incl SWR/PWR meter 200 W — \$169.00
CW177 Delta incl SWR/PWR meter 500 W — \$199.00
MFJ-901 MFJ Matches everything 1.8 — 30 MHz — \$119.00
MFJ-901 MFJ Random wire tuner 180-100 M — \$71.00
MFJ-901 180-100 M 300 W incl SWR/PWR — \$137.00
LAC-585 Leader 3 1/2 Hru 28 MHz — \$169.00

Antenna Rotators (Daisis)
DR7600S Heavy Duty with controller & mast clamps — \$269.00
DR7500S Medium Duty with controller & mast clamps — \$189.00
4 Core Cable for above 1200 m coils — \$1.00/m

GRF Transmitter (MFJ)
MFJ-40T 5w 40 meter CW (Kits not included) — \$59.00
MFJ-40V JFO unit for above — \$69.00

Hand Held Transceiver
AR420 2 meter 500 ch synthesized 1.5 w — \$365.00

Bates Low Pass Filters
FC30LS 32 MHz Rx 200 w, 2 stages — \$28.00

Bates
AS-9L 50 ohm 50 ohm for beams — \$34.00
BL50A 50 ohm, 4 KW 1:1 for dipoles — \$30.00
BL70A 70 ohm, 4 KW 1:1 for dipoles — \$30.00

Radio Test Equipment
LAC 685 Antenna Coupler 3.5 — 28 MHz — \$189.00
JPM-585 SWR/PWR Meter — \$89.00
JPM-585 RF Power Meter — \$135.00
LIM 815 TRQ Meter — \$89.00
LBO-310 3" High Oscilloscope — \$310.00
LA 31 Pen monitor/oscilloscope — \$25.00

Just arrived!
The IC22s 2m FM transceiver
It's now available at a special price. Come in and check it out.
Now only \$299



Radio Telescope Terminal
G-7000 Tenax RTTY CW/Baudot/ASCs — \$899

Finals for Yaesu Intercom — \$9.00
8J58C Driver — \$3.75
C1458 Final — \$12.00

CW Finals
FT101E Yaesu — \$39.00
TS520S YG3395 Kenwood — \$57.00
TS280S YG38C Kenwood — \$57.00

Motor Keys
HKT02 Deluxe Key with marble base — \$41.00
HKT03 Economy Key — \$23.00
HKT06 Operator's Key — \$35.00
MKR701 Microdot (slide-switch) — \$45.00
PALOMAR 1 C Keyer — \$149.00

SWR/PWR Meters & Dummy Loads
WD-2 Twin meters 2-150 MHz with cal. chart — \$35.00
SWR200 Owenstock 3-200 MHz 2:20/200/2000W — \$69.00
SW210A Daves 1.8 thru 150 MHz 20:1/20 W direct — \$99.00
SW410A Daves 140-500 MHz direct reading — \$129.00

CN620 Daves Cross needle 15-150 MHz direct — \$99.00
CN630 Daves 140-450 MHz 20:200 W direct reading — \$135.00
CN650 Daves 1.2 — 2.5 GHz 2:20 W direct reading — \$149.00
LPM-BBS Leader SWR/PWR meter — \$89.00
LPM-BBS RF Power Meter — \$135.00
RFW 15450 Kuratich RF Power Meter — \$185.00
RFW 15110 Kuratich RF Power Meter — \$165.00
RFW 1002L Kuratich RF watt meter — \$139.00

Kenwood Transceivers
TS-520S P.O.A.
TS-820S P.O.A.
TS-120V P.O.A.
TL-992 P.O.A.
TS-120S P.O.A.
TRY US ON OUR PRICES FOR ALL KENWOOD PRODUCTS!

Coastal Switches
CS301 2 position high pass to 500 MHz — \$23.00
CS401 4 position high pass to 500 MHz — \$39.00

Coastal Change-Over Relays (Daisis)
CR 2L 1.8 Hru 170 MHz 100 W pwp max — \$45.00
CR 2H 1.8 Hru 450 MHz 200 W pwp max — \$95.00

Jaybeam Antennas
SV2m 5w 2 m, 7.8 ddb gain, length 1.6 m — \$45.00
SV 2m 5w 2 m, 9.5 ddb gain, length 2.6 m — \$81.00
10Y2m 10w 2 m, 11.4 ddb gain, length 4.4 m — \$84.00
10KY 2m 10w 2 m, 10.5 ddb gain, 11.3 ddb — \$114.00
DB 70cm Twin 5w, 70 cm, 1.5 ddb, 1.1 m — \$54.00
P5M 18.70 16w 70 cm, 14.9 ddb, 2.8 m — \$86.00
MBM 48.70 48w 70 cm, 15.7 ddb, 1.83 m — \$83.00
MBM 70.70 68w 70 cm, 15.5 ddb, 3.98 m — \$105.00
Phon 2C 2 m cross yagi — \$29.00
8KY 2M 2 m cross yagi, 8w, 9.5 ddb, 2.8 m — \$99.00
12XY 70 ohm 70 cm cross yagi, 12w, 13.0 ddb, 2.6 m — \$139.00

Parabolo Dishes
PBA-1200 70 cm dish & 2 GHz complete — \$349.00

Rak Antennas
AL-2400H 20-40 m trap dipoles — \$79.00
A4VFN 40 m dipole kit — \$27.00
LISTENER 3 Short wave Rx antenna — \$49.00
LISTENER 1 Short wave Rx antenna — \$22.00

Nagars
SS58 8 m 5 el beam 1 kW — \$159.00
VLSR 80-150 m trap vertical, 6.7 m high — \$129.00
VALJR 40-70 m trap vertical, 5.2 m high — \$89.00

My-Gain Antennas
HYQAD 10-150 m, 2 element quad — \$279.00
20AB4 4 el monopole for 20 W — \$259.00
TH50XN 8 el Inboard — \$310.00
TH-3MK3 10-150 m 3 el beam — \$49.00
TH-3JR 10-150 m 3 el beam — \$79.00
20AB3A 3 el beam 20 W — \$139.00
LONG JOHN 5 el wide-spaced 27.8 MHz — \$190.00

CUSTOM COMMUNICATIONS

NOW IN BRISBANE

95 BRUNSWICK STREET
FORTITUDE VALLEY

(07) 52 7326

SWAN TRANSCEIVERS

350B ANALOG READOUT 300W DC INPUT
350 D DIGITAL READOUT 300W DC INPUT
HF-700S 500W DC INPUT INCLUDES P.S.
100 MX 100 W SOLID STATE MOBILE
16 POLE X-TAL FILTER FOR MOD 500, 700,

\$500.00
\$630.00
\$795.00
\$630.00
\$65.00

SHURE DESK \$54
SHURE H.H \$36
MOBILE
MATCHBOX \$35
ANT TUNER
4 Kw 4:1 \$195
ANT. TUN WITH
METERS \$245.00
ETC.

INTERSTATE & COUNTRY
DEALERS
OX ENGINEERING
PORT MACQUARIE
MACLEOD
WOLONGONG
ROD PIKE TRADING
COONAMBLE
DIETCHRONICS
NEWCASTLE
ARMICAL ELECTRONICS
ARMIDALE
WILF MURRELL
HILLSTON
HARVEY SCOGG
TASMANIA
STOCKMAN & HIGGINS
INVERELL

CONTESTS

Wally Watkins VK2DEW
Box 1085, Orange 2800

November:
17/18 ARRL PHONE SWEEPSTAKES
24/25 QG WW DX CW CONTEST

December:
1/3 CONNECTICUT QSO PARTY
8/9 AUSTRALIAN NOVICE CONTEST
15/ ROSS HULL VHF/UHF MEMORIAL
15/13 JAN ROSS HULL VHF/UHF MEMORIAL CONTEST

Note that the Australian Novice Contest replaces the previous contests organised by the Westlake Radio Club.

One recommendation in my last annual report to the Federal Conference was that the Ross Hull Contest be disbanded in its present form due to the lack of interest in submitting logs. To me it is a waste of my time and a waste of valuable space in the magazine organising a contest which results in less than ten logs being sent in. A recent Rumanian contest had a good idea. If the other chap didn't send in a log you could not claim a contact with him for scoring purposes. If entries are not well up this year I will seriously consider a similar rule next year. This year's Ross Hull contest is the last one for the Contest Champion Trophy for 1979.

ROSS HULL VHF/UHF MEMORIAL CONTEST 1979-1980

Firstly some details about the man whose name and achievements we honour with this annual contest.

Ross Hull, born in Melbourne in 1902, studied to be an architect. By 1922 he had become one of Australia's outstanding amateurs and in 1928 with the call OASJU, was secretary of the WIA.

In the same year he went to America and asked for a job in the editorial department of the ARRL, and soon rose to the position of assistant technical editor of "QST". In 1929 he became the logical choice for director of the ARRL programme for special technical development to devise new apparatus. It was from this appointment that the real ability and genius of Ross Hull was to emerge and give brilliant success to the programme. Some of his new innovations included "Bandspreading" of amateur receivers, the first serious use of the Superheterodyne for the reception of amateur phone transmissions, the first presentation in amateur radio of 100 per cent modulation, the use of Linear Amplifiers and the introduction of the Signal Monitor.

Ross Hull had a flair for unorthodox construction techniques. He put his valves upside down, shorten leads and rejected the "breadboard" in favour of a bent metal chassis. He always set the pace in apparatus design only to be excelled by his own rigid and beautiful construction.

In 1929 he returned to Australia to become editor of "Wireless Weekly" for 18 months until he was attracted back to ARRL as Associate Editor. He became the mainspring of the "QST" editorial staff.

He popularised 56 MHz for local contacts and conducted long term research into UHF propagation and for the first time established the reason for the bending of these waves in the lower atmosphere.

With his activities, his amateur radio, his piano, his camera, his workshop and his cottage on a Connecticut hilltop he was leading the world in amateur radio. However, it was in 1938 that a power supply for his television receiver caused his untimely death. A power supply giving 5,000 volts for a large kineoscope. His advice was "Switch to Safety", and a great man met instantaneous death doing something which he had taught the world not to do.

So with the annual Ross Hull Memorial Contest we honour this amateur who did so much to steer the following generations of amateurs along the sound technical road we know today. A perpetual

trophy is awarded annually for competition between members of the WIA. The winner's name is inscribed on the trophy and he receives a suitable certificate.

OBJECTS

Amateurs in Australia and its territories will endeavour to contact as many other amateurs as possible under the following conditions.

CONTEST PERIOD

001Z on 15 December 1979, to 2400Z on 13 January 1980.

BANDS

All amateur bands above 30 MHz may be used. No crossband operation is allowed. Operation via solve repeaters and translators is not allowed.

EXCHANGE

RS(T) plus a three figure serial number. The first number may be any number between 001 and 999 and will be increased by one for each contact when 999 is reached a start is made from 001.

RESTRICTIONS

Multi-operator stations are not allowed. Only one transmission at a time for all stations. Two contacts per day per band with each station irrespective of mode, providing two hours have a speed since the previous contact. Entrants must operate within the terms of the Licence.

DURATION

Any seven GMT days within the contest period, not necessarily consecutive.

SUMMARY OF LOG SHEET

A front sheet must be attached showing the following information in this order:

Name, Address, Section, Call Sign, 7 Day Score, Operating Days, Best 48 Hour Score, Operating Period.

Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the contest. Signature

LOG SHEET

It is desirable that complete logs for the whole contest be submitted for cross checking purposes, photo copies are preferable.

The log must show the following information: Time GMT, Band, Emission, Btn Worked, Tx exchange, Rx exchange, Points, Bonus. Each page should be individually totalled for points at the bottom.

SCORING

Scoring will be based on the following table:

	52	144	432	576	1296/p
Less than 200 km	2	2	5	10	20
More than 200 km					
Same Cal Area	5	5	16	25	50
More than 200 km					
Other Cal Areas	10	10	25	50	100

BONUS POINTS

Each new call area contacted, 20 points, once only per band per GMT day, including own call area.

ENTRY CLASSIFICATIONS

(a) Transmitting Phone (AM, FM, SSB, ATV, SSTV)
(b) Transmitting CW (CW, RTTY)
(c) Receiving (any modes)

AWARDS

The entrant with the highest score in either section (a) or (b) will be the winner and his division will hold the trophy for one year.

Certificates will be awarded to the highest score in each section and in the case of (a) and (b) to the highest score in both the seven day and the 48 hour divisions. A winner of a seven day certificate cannot be awarded a 48 hour certificate as well. Certificates will not be awarded on a call area basis unless there are more than 10 logs received for that section.

SUBMISSION OF LOGS

Entries are to be sent to the FCM, Box 1065, Orange 2800, postmarked no later than 4th February, 1980, and endorsed "Ross Hull Memorial Contest".

SPECIAL RULES FOR RECEIVING SECTION (c)
SWLs only may enter this section.

Visiting Hong Kong

LET US ASSIST

WRITE FOR
INFORMATION

ALL BRANDS

HF

VHF

UHF

RECEIVERS

ACCESSORIES

Tel. K 36 0606 K 38 3774

DELTA COMMUNICATION SERVICES LTD.

15 CUMBERLAND ROAD,
KOWLOON-TONG, KOWLOON
HONG KONG

YOU and DX

Mike Bazley VK6HD

8 James Road, Kalamunda W.A. 6078

DX NEWS FROM THE CONX CLUB

Paul VK3VDF worked JTDLAJ on 18-4-79 at around 0810 GMT on 21 185 MHz. The JT was in QSO with a UA0 and the JT went QRX to answer the phone. Paul called and told the Russian how much he would like to work the JT. The Soviet operator said "Don't we all!" but put him on to the JT anyway. The JT's QTH was Ulan Bator.

Good DXing . . . It proves once again that it pays to listen.

Peter VK3NNY has now worked over 150 countries and has the greatest number in the club. Five of us have now worked over 100 countries and it appears that Peter may be the first Novice to get the DXCC on CW alone. Any comments—From Trevor VK3NNR.

LONELY OUTPOST

The site of the Okino-Torishima Expedition in mid-June. Due to dangerous conditions the operation was limited to only four days. See report in September AR, page 37.

BOTSUANA CALL SIGNS

Barnes, R. G. A., Box 250, Gaborone, A22AJ
Broome, E. F., C/o Box 173, Francistown, A22AJ
Broome, N. M., C/o Box 173, Francistown, A22AJ
Bushe, D. W., Box 604, Gaborone, A22AB
Deltgen, M. P., Box 1054, Gaborone, A22MD
Ewels, G. E., Box 601, Gaborone, A22AH
Faler, A. P., Box 601, Gaborone, A22RA
Gani, J. A., Box 60, Gaborone, A22OJ
Hornstead, J. G., C/o Box 604, Gaborone, A22AR
Harris, D. W., Private Bag 0060, Gaborone, A22BX
Hosang, H. D., P/Bag 60, Gaborone, A22VX
Isseca, J. M., Box 516, Gaborone, A22JH
Kanika, B., P/Bag 2, Molepolole, A22BT
Kierstead, H. R., Box 10, Kasane, A22RK
Lange, A., C/o Box 315, Gaborone, A22FO
Lehring, F. T., Box 91, Francistown, A22FL
Makaya, D. G., UBS, P/Bag 22, Gaborone, A22AS
Morris, S. A., Box 516, Gaborone, A22SM
Paterson, D. K., C/o Moeding College, P/Bag 11, Lobatse, A22DK
Ramenchandran, S., Box 947, Gaborone, A22SR
Ramenchandran, S., Box 947, Gaborone, A22DN
Schmidle, L., Box 501, Francistown, A22BW
Spokund, E. A., Swedish Embassy, Box 17, Gaborone, A22DD

Strauss, R. J. W., Box 35481, Northcliff, 2115, RSA, A22PS.

Thompson, E. P., Box 1390, Gaborone, A22ED
Welker, C. D., Box 84, Selebi-Phikwe, A22DW
Sulu, G. V., Box 516, Gaborone, A22GV
Sulu, A. V. (Mrs.), Box 516, Gaborone, A22GW.

NOTE:
Prefix now A22 instead of A2C since 2nd September, 1978.

Join the IW net at 2300Z on Thursdays on 14165 kHz when you have intruder information.

BOOK REVIEW

500 QUESTIONS FOR AOCIP CANDIDATES
BY NEW WIA YRS Education Service.

Another excellent book for the aspiring amateur from the dedicated group in New South Wales. A definite must for any candidate for the AOCIP.

With the shift to multi-choice examinations the aspiring candidate no longer can gain practice by answering old exam papers. In order to fill this gap this book has been prepared.

It is still too early to know whether the standard of the exam is exactly the same as this book and

the syllabus, however the book is extremely close both to the syllabus and to the standard of those sample questions which have been released.

A most useful book for the aspiring candidate. Once P and T, have a similar and larger book of questions, "instant" exams over the counter with "instant" call sign issues would be quite practical if the FCC can do it in the USA why not P and T in Australia?

Available from NSW WIA YRS.
VK3AJU.

MOST OFTEN ASKED QUESTIONS AND ANSWERS ABOUT AMATEUR RADIO

By Leo G. Sands and Joseph L. Lynch. Published by Hayden Book Co.

This is an introductory book for someone just getting into amateur radio and progressing toward a licence.

Much of the information is of necessity only directly applicable in the USA, however there is general information and theory which is the same everywhere.

The treatment is of necessity fairly shallow as it is not possible to cram an encyclopaedia into 112 pages.

Available through Butterworths, 586 Pacific Highway, Chatswood, NSW, or your favourite book shop.

VK3AJU.

MODERN CB RADIO SERVICING By Marvin Hobbs. Published by Hayden Book Co.

A wide ranging treatment of the service of CB radio equipment covering both the units and the installation of them. Also included are details of various items of test equipment and the treatment of mobile motors.

Whilst some specific equipment is shown, it is used to demonstrate typical arrangements, frequency generation plans and layouts. There is a necessary due to the multiplicity of equipment types available.

General service philosophy is handled together with various fault finding plans designed to quickly localise faults. This is no doubt a reflection on both of the cost of labour and the cheapness of many CB sets.

With the availability of CB radio and their popularity for conversion to 10 metres and 5 metres the general expansion of techniques used and the frequency generation plans in use would be most valuable.

Available for \$8.50 through Butterworths, 586 Pacific Highway, Chatswood, NSW, or your favourite book shop.

VK3AJU.

A GUIDE TO AMATEUR RADIO—17th EDITION By Pat Hawker G3VA. Published by Newnes-Butterworths.

This book is aimed at the budding amateur or recently qualified amateur. It presents a mixture of amateur radio information, theory, and constructional information in the manner familiar to anyone who has read the RSGB publications.

Some of the licensing information on applicable only in the United Kingdom. However, this is similar to the local requirements and does provide you with some insight into the licensing structure in England.

The list of CW abbreviations would be welcome to many budding amateurs who may otherwise doubt their ability to copy code when the first string of abbreviations returns. These are a very essential part of CW operating and can easily throw the newcomer.

Another interesting feature is a listing of many rigs. Whilst some are of UK origin, by far the majority are also types which have been sold locally. Quite useful when trying to work out what the gear in the Hamad is.

An interesting and informative book bound in a durable hard cover, which accounts for the price of \$14.50.

Available from Butterworths, 586 Pacific Highway, Chatswood, NSW, or your favourite book shop.

VK3AJU.

Logs must show the same information as a transmitting log except for the second number exchange. If both stations are heard both can be claimed but on separate lines of the log.

Scoring is as for transmitting stations.

Any scoring contacts can be logged, there is no limit to the number of times that one station can be logged.

There is only one division in this section, that is for a duration of any seven GMT days, not necessarily consecutive.

The decision of the FCM is final and no correspondence will be entered into.

AUSTRALIAN NOVICE CONTEST RULES

The contest will take place from 0800 GMT 8th to 0759 9th December, 1979, for all novice and full call amateurs.

OBJECTS OF THE CONTEST

To encourage contest working between amateur stations in Australia, New Zealand and Papua-New Guinea during a 24 hour period, with special emphasis on contacts with novice and radio club stations.

STATIONS ELIGIBLE

Only stations in VK, ZL and P2 call areas may enter. No stations outside these areas are permitted to be worked or enter a log. Except for radio clubs, no multi-operator working is allowed. Stations in your own call area as well as other call areas may be worked.

CONTEST BANDS

Only the novice allocations on 80, 15 and 10 metres may be used. This applies to full call stations. No multi-band operation is allowed. Contacts should be Phone or CW.

SCORING—TRANSMITTING

For contacts with a novice station, 5 points.
For contacts with a radio club station, 10 points.
For contacts with a full call station, 2 points.

SCORING—LISTENING

Novice/Novice contact, 5 points.
Full Call/Novice, 2 points.
Novice/Full Call, 2 points.
Full Call/Full Call, 2 points.
Any contact with a radio club, 10 points.

CALLING PROCEDURE

Phone call "CQ Novice Contest" and on CW call "CQh". Stations may be worked only once per mode per band.

RECORDING

Phone, RS report plus three figures. These three figures may start anywhere between 001 and 999, but when 999 is reached you must start again at 001. CW, RST report plus three figures on the previous basis. Radio club stations will add the letter "C" after the number above.

CONTEST SECTIONS

(a) Novice/Full Call Phone
(b) Novice/Full Call CW
(c) Listeners

LOGS

Logs must show GMT time, station worked band, mode, NR sent, NR received, score claimed and score tally for each page.

A front sheet must be attached showing the following: Name of Operator, Call Sign, Address, Section Entered and Points Claimed.

Logs are to be sent to the Federal Contest Manager, Box 1065, Orange 2800, and must be postmarked no later than 23rd December, 1979.

CERTIFICATES

Certificates will be awarded to the highest score from Novice Phone, Novice CW, Radio Club Phone, Radio Club CW, Full Call Phone, Full Call CW, Listener Phone and Listener CW.

A trophy to be known as "The Keith Howard VK2AKC Trophy" will be awarded to the entrant with the highest aggregate score in the (a) and (c) sections and will be held by the winner for a period of twelve months.

The decision of the Federal Contest Manager is final and no correspondence will be entered into regarding such decision.

AWARDS

COLUMN

Bill Verrall VK5WV

7 - 100 Ave., Flinders Park, S.A. 5025

TEN-TEN CHAPTER AWARDS

Several of these awards are available from VK and overseas countries and are only issued to hams who have 10X membership for contacts on the 10 metre band.

The 10X program was formed for the specific purpose of promoting more and continued activity on the 10 metre band. To qualify for 10X awards, log details only are required and a point scoring system usually applies.

For further information I suggest you ask any of the 10X members and I thank Bill VK5WV for explaining the system to me and showing me a section of 10X awards that are available.

Here are the details of a 10X award available from the Festival City Chapter of the 10X International net which was formed in Adelaide, SA, in May 1978.

VK5 FESTIVAL CITY AWARD

This award is available for working 10X Chapter members in the City of Adelaide, SA.

NET TIME AND FREQUENCY

Sunday (Aust.) on 26540 kHz at 0030Z

AWARDS

Basic Award — 10 points, fee \$2 Aust. airmail.
Senior Seal — must work 1 Ch. — 50 points, fee \$AE plus 2 IRCs or \$0.50 in Aust. mini stamps.
Century Seal — must work 2 Ch. — 100 points, fee \$AE plus 2 IRCs or \$0.50 in Aust. mini stamps.
VIP Award — to be announced at a later date.

Senior Seal is 2 points, Century Seal is 3 points and VIP is worth 4 points. Overseas stations may apply for Senior and Century Seals together, for 5* Australian and VIP Award applicants must hold Senior and Century Seals.

VALUES

Charter member — Ch. 5 points.
Charter member — CH. 5 points.
First State — FS 3 points.
Other members — A 1 point.
Chapter member — C.

Chapter membership is available for \$2 Aust., is permanent, and is worth an additional point.

First Festival City Chapter award issued to each VE, W, VK or JA prefecture or similar call areas in other countries.

Applications must show the date, time, call sign, QTH, name, Ten-X No. and FO No.

AWARD NUMBERING SYSTEM

1 to 100 — Charter Members
101 and upward — First State
1010 and upward — Chapter Members.
251 and upward — Member

DESCRIPTION

The certificate measures 265 mm x 205 mm, printed in red on high quality white card.

Applications should be submitted to the Awards Manager, Bill Vogel VK5NVW, 16 Wandilla Street, Largs North, SA 5016, Australia.

BLACK MARLIN AWARD

This award is available to Australian and overseas hams for working members of the Cairns Amateur Radio Club. The award is also available to SWLs.

The award is called the "Black Marlin Award" because of the marlin sports fishing done in the waters around the Cairns area.

REQUIREMENTS

1. Work seven members of the Cairns Amateur Radio Club, or five members plus the Club station VK4HMI.
2. Club members must be within 100 kilometres of Cairns, therefore contacts made with club members who are not within 100 km are not valid.
3. QSL cards are not necessary, just send log details.


Cairns: The Black Marlin Capital of the World

CAIRNS AMATEUR RADIO CLUB

Black Marlin Award

Certificate No. _____

Date: 20 August 1979



This is to certify that Amateur Station _____

VK4YT
Club President

has satisfied this Committee that he has had two way communication with the following CAIRNS STATIONS:

1. _____	7. _____
2. _____	8. _____
3. _____	9. _____
4. _____	10. _____

John VK4QRP
Awards Manager

The Black Marlin Award Certificate.

VK5 Festival City Award

10 X CHAPTER

THIS IS TO CERTIFY THAT AMATEUR RADIO STATION _____

OPERATOR _____

HAS COMPLETED REQUIREMENTS FOR THIS AWARD



CERTIFICATE NUMBER _____

DATE _____

AWARDS MANAGER _____

ADELAIDE FESTIVAL CENTRE

SOUTH AUSTRALIA

The Festival City Award Certificate.

4. Cost is three IRCs or equivalent for Australian stations (\$1) or five IRCs or equivalent for overseas stations.
 5. Endorsements may be claimed for "All CW", "All SSB", etc.
- Applications should be submitted to the Awards Manager, Cairns Amateur Radio Club, PO Box 1426, Cairns, Qld 4870, Australia.

DESCRIPTION

The award measures 256 mm x 200 mm printed in three colours on high quality paper. The club name is in red, border in dark blue and logo in black.

DXCC NOTES

DESECHIO IS. KP4AM/D
Credit for this location is now approved All

operations before 1st March, 1979, will not be accepted, only operations on or after that date.

CANAL ZONE KZS

Under a treaty executed between Panama and the USA in 1977, this piece of real estate reverted back to the administration of Panama (HPJ) on 1st October, 1979. Therefore KZS became a deleted country on that date. The KZS QSL Bureau will remain in business for a further two years to clear all outstanding QSLs. All DXCC tallies are being progressively amended. Therefore the current total of 'active' DXCC countries remains at 319.

VENDA-LAND

This area obtained self-government from the Republic of South Africa on 13th September, 1979, and several expeditions operated from Venda during the 'independence' celebrations using the prefix T4. Contacts were made with T4A by several Australian stations and I also worked T4VEN. However the country comes into the same category as H5 and S8 and is not recognised for DXCC.

CORRECTIONS

The following corrections should be made to the listings of new DXCC members shown in September 1979 AR Under 'phone' Certificate No. 174 was issued to VK5VM Under 'CW', delete VK5DZ Certificate No. 103 was issued to VK6PY

ISN'T ANYTHING SACRED?

consider I am duty to report to all DXCC aspirants a recent unique experience for your Awards Manager. During September I had the privilege of issuing DXCC Nos. 190 and 191 to a husband and wife team—Christie and Mick. Both VK4ABM and VK4AMB I offer my congratulations on a particularly commendable effort by two comparatively recent licensees.

This achievement must surely be of special significance because I am not aware of any other QMs or XYLs who share, to such an extreme, a common interest in ham radio.

I am somewhat disturbed that the may herald a trend in ham radio that may worry some of my fellow MSPs.

I must admit that there are some advantages in cultivating such an interest in the VK5WV ham shack, but I am not altogether convinced that the advantages would outweigh the disadvantages.

Good hunting.

QSP

LETTERS TO THE EDITOR

The following is an extract from a letter written by a JP to the Pres. of the WIA, Queensland Division and forwarded by him to the Postal and Telecommunications Department, strongly supporting objections to traffic of this nature on air via amateur radio. The objections have also received strong support in a letter to the Department from the WIA Executive requesting an end to the alleged contraventions.

"But for weeks in fact months now, I have been monitoring a session—emanating basically from VS but VK stations do participate. It is called 'Rendezvous Group'. In actual fact run by Jehovah's Witness Organisation on 29.57 z, starts about 8.30 a.m. local time I mentioned it to one of the RAs in Rocky (Mike Duffin) and he requested a tape of it—which I duly forwarded. Unfortunately Mike was transferred recently, so I don't know the outcome. VK6 is the main station, but VK6, VK2, VK4, VK3 all participate. I am pretty tolerant I think with 'stretching the regulations', but the blatant abuse gets me hopping mad. I guess some would think I was out for a purge BUT I know of no other religious organisation who uses amateur radio to further their cause. But in my 'book' Regulations 72, 80, etc. (of Chapter 8 of 1987 issue of the Regulations), is being abused I would object to anyone else who used this medium to further their aims, believe you me."

(Sgd)

J.P. VK4.

ERRATA

In the October issue the name and call sign of the first letter to the Editor was accidentally omitted. He was John Lochie VKCZWL.

INVISIOnAL NOTES

VK3

ALARA

The Australian Ladies' Amateur Radio Association (ALARA) will be holding its Annual General Meeting on 24th November, 1979, at the home of Heather Mitchell VK3AZU at 2.30 p.m. For further information please write to ALARA, Box 110, Blackburn 3130, or contact the WIA offices.

PETER MITCHELL VK3ANX

Peter is the current broadcast committee chairman. He obtained his full call in October 1976 and joined the group in June 1979. Peter joined in response to a call for volunteers to help run the station. He now actively repairs and adjusts the station equipment and keeps the team of announcers on deck with the announcers' roster (A real battle on Sunday mornings!)



Peter repairs and adjusts the equipment on Saturday afternoon. This is the only suitable time for him to gain access to the station. Consequently he is pressed for time and as such does an excellent job. As a result of his efforts the station runs very well.

Peter says that the main function of the broadcasts is to reach all amateur operators. However, propagation of the radio waves is not always favourable. The function of the broadcast committee is to present the news, not collect it. The broadcasts are a medium for presenting news from all quarters for amateurs. It is up to the interested parties to get their news in to the broadcast group. Peter is making a worthwhile contribution to the WIA by helping to run the museum station.

Peter's other interests are: DX on HF, sewerage maintenance engineer with the Melbourne Board of Works.



NEIL MUSCATT VK3BCU

Neil joined the team of announcers in January 1977. He received his licence about 10 years ago. He finds the broadcasts both interesting and as an opportunity to keep contact with amateur radio, although not heavily involved. He finds it an enjoyable way to socialise and it fills a time on a Sunday morning. He likes a newsy programme.

Neil's other interests are Technician with Telecom, squash, ballroom dancing, photography, ATV.

VK2

ST. GEORGE'S AMATEUR RADIO SOCIETY

The Society will hold its November meeting and all future meetings at the Scout Hall in James Street, Blackhurst.

The first Wednesday of each month and a starting time of 1930 hrs EST still remains unchanged.

The Channel 1 repeater VK2RDX, which was recently vandalised is well on the way to being re-installed at Mt Sindt and many thanks for this go to the people who kindly offered donations to our rebuilding fund and also to the many amateurs in the Oberon, Bathurst area who have taken a large share of the physical rebuilding of the tower and the safe keeping of the repeater unit.

VKA—RTTY

The Townsville Amateur Radio Club presented the fourth biennial North Queensland Convention at the Townsville College of Advanced Education on 14th to 16th September.

About 100 delegates, mainly from North Queensland and as far as VK3 attended.

Friday evening was quite informal with many of the visitors having a conducted tour of our civic theatre.

Saturday was a non-stop programme, with 'fox' hunts, hidden transmitters, films, home brew competitions, technical seminars, visit to the James Cook University Physics Department, fashion parade and craft demonstrations.

Our official station, VK4WIT, was on air for the whole period, both on phone and RTTY (RTTY equipment which belongs to VK4AM, who used VK4WIT call sign. As we featured SSTV.

We were honoured to have the State President of WIA (John Aarne VK4QA) with us, to talk to us on WIA matters.

Our social evening on Saturday was a great success and a collection was made for WARC 72.

Sunday saw the WIA news broadcast and call-backs from VK4 Division and VK2TTY, fun events and forum discussions on items submitted, lecture, and inspection of technical aids (which included the RAAF log periodic situated at the Bonnie transmitting station). Amateur Radio was given a great boost by the Convention with favourable publicity on radio, TV and press.

VK4

The Ipswich and District Radio Club will be host to the 1979 Wireless Institute of Australasia Queensland Division Convention to be held on the 17th and 18th of November, 1979.

The venue for the Convention is the Ipswich Showgrounds, where a diversity of activities will be available. In addition to the usual Convention attractions, the weekly trading meeting is held on the Saturday and, on Sunday, sea markets and auctions present a popular diversions for the families.

There will be competitions, technical seminars, "Swap Shop", equipment auctions and films, and demonstrations, for both the OM and the XYL. The ladies will be entertained by the Mayress and her committee and a bus tour on the Saturday afternoon will be a journey back into history.

The semi-formal dinner dance on the Saturday evening will be held in a very pleasant informal atmosphere and will only cost a very reasonable \$10 a head, which includes registration for both days. The Convention will attract a registration fee of \$150 for either Saturday or Sunday or \$250 for both days.

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

PO Box 34, Selebi-Phikwe, Botswana.
16 September, 1979.

The Editor,
Dear Sir,

This is a very long overdue note. When I first moved here in 1975 Peter Dodd wrote me and asked for an article for AR. This is to go some way to make amends.

Enclosed are the first three issues of the BARS newsletter and should be self-explanatory.

The latest information is that AGO is no longer and we now have the A22 prefix, with provision for using A24 for a Novice licensing scheme. The change took place at 0730 GMT on Sunday, 2 September — two weeks ago today.

As of today there are 11 licensed members and six associate members of BARS, with the list growing.

The man mover behind this has been Dave A22BX in Gaborone.

The most active amateurs in Botswana are Dave A22BX, in Gaborone, QSL via Radio Botswana, Larry (Lothar) A22BW, in Francistown, QSL via DICKAD, Don A22EK, in Oorika, QSL via VK3ATQ (in tx), Chris A22DW, in Selebi-Phikwe, QSL via VK7CH.

Dave is ex GB land and works as technical director in Radio Botswana, Larry is a Serron Volunteer but in process of setting up his own business. Don is a teacher at a school and is ex VK3 in A22 land since 1978, and myself am an electrical engineer (power) for the copper-nickel mine here and been in S/P since March 1975.

Don has a regular sack with his brother (VK3) and I have a weekly sack with Chas (or Snow) VK7CH.

There is no bureau in Botswana and unlikely to be for quite a while, hence the reason for the QSL information.

Most activity in A22 land is on HF bands — 100 or 40 metre (very little on 80), but we share 40 with the tropical African BC stations so we suffer a lot of QRM — at night we have in Selebi-Phikwe anyway only about seven clear kHz spread over the bottom 100 or so kHz of 40!

The BARS have received the "Project Goodwill" receivers and some QARC 20m receivers, and these are being used with avid interest by both Gaborone and Oorika.

I am the only amateur in Selebi-Phikwe, so we are a little out of from the activity.

Recently Dave A22BX, with Pete A22PS and Graeme Z68BMO worked Oscar Mode J and became the first A22 to work Oscar.

Myself am gearing up for 8 metres and looking for the openings — have an FT620B and in process of building a 5/8 yagi set for 8. Am corresponding with VK3AQR, VK3ASQ and talking 5 on 10 metres with whom I can.

Work takes up 5 1/2 days a week so only clear time I get Sunday (very little on 80), and usually on 10 metres before 0730 and after 0800.

Hope this short note and attached newsletters will be of interest to you, Bruce, or any of your contributing editors.

I will try and write an article or two for you before I leave A22 land next July.

Vy 73a Chris A22CW
Chris Walker A22DW (VK7UX)

P.S. AR still keeps me in touch with VK and is a very high class journal compared to Radio ZSI. I believe there is an article in the latest "QST" re A22 land!

The Editor,
Dear Sir,

Didius Julianus of Rome once said, "To be pedantic to one's own subjects is to exercise authority, but unto others it is the egotisticality of a buffoon".

This quote from a great man is more than suffice to describe the narrowness of Mr. Hunt's cerebral thoughts whilst scribbling his "International Correspondence" letter to the September issue of Amateur Radio. I wonder if your Japanese is as good as their English. The spelling of the "Tokyo" letters appears to be in order, however some difficulty is apparent at their ability to achieve proper construction.

I suggest you hop off your soap-box and take a trip to anywhere but Victor Harbor and just maybe you will realise what an extremely difficult subject English is to a foreigner. I'm Irish; and we all know what linguistic experts we are!!

Yours humbly,

Robert J. McKibbin

The Editor,
Dear Sir,

THOSE QSLs

The perpetual problem of what to do with all those piles of QSL cards you have collected over the years.

After that elated feeling of receiving your first DX QSL, the next thing is how to cope with that continuous stream of incoming cards. The usual procedure is to pin all those exotic call signs on the wall behind the rig. When that area is taken up, the obvious move is to include the ceiling and the other three walls. From here on it is only a short step to the well tried "shoe box" treatment. Eventually, of course, those boxes can take up the entire floor space, when it then becomes necessary to consider the possible purchase of a "work lift" to solve the stacking problem as the never ending stream continues unabated. However, one system I experienced proved to be quite satisfactory and occurred when I held a pre-war New Guinea call sign. Due to the 1935 traces, all those precious cards disappeared instantly along with the rig, the generator and the battery charger. It could be called the "instant disposal" method, although I could not recommend a repeat performance.

Of course we all like to preserve those cards, reminding us of some special QSO, like the time a chap in Alaska area said he had a 200 yards long rotary rhombic. Quite incredible, I thought. It turned out he was some research scientist recording the movements of a drifting ice-flow.

In those nostalgic pre-war days of the 6L6, 807 and those lovely blue-glowing 866s and when there were licensed hams in China with the prefix of XU2. Try it sometime on CW, it's really got a rock and roll swing to it.

With the present day craze of miniaturisation going on, it should soon be possible to have a 100 watts final in a matchbox. The day must surely be drawing near when all the QSL information is recorded on microfilm. The storage of vast numbers of QSLs will then be a thing of the past. By following today's business trends of cutting down on all avenues of overhead, it should be possible to produce a continuous roll of QSL cards similar to a perforated toilet roll. On completion of the day's QSOs, merely tear off the required number of QSLs for dispatch.

Seriously, there must be some bright spark in our midst who can come up with the ultimate answer to this problem of storing, storage and filing of that never ending stream.

R. B. Montfries VK5RB.

569 Inkerman Rd., Caulfield 3161
September 3rd, 1979

The Editor,
Dear Sir,

Having completed 10 weeks' stay in Australia I should like to express my gratitude and affection to the local boys whom I met on the air and in eyeball QSOs, through the pages of Amateur Radio. Thanks to active assistance of Bob VK3JK,

Dick VK3AQR and David VK3ADM, I was able to establish my own station here. Your authorities should be commended for the prompt issue of my licence and call.

I am returning now to my home country, Israel, with many good memories of warm and generous welcome in Australia. Should any VK need information and assistance in way of a reciprocal ham in Israel I'll be glad to help.

Dr Oded E. Schremer 4X450/VK3BSV

32 Corsair Street
Bussellton 6290, WA
18th September, 1979

The Editor,
Dear Sir,

I wonder how many operators fell into the same trap that I did, and entered the recent Remembrance Day Contest without having first carefully studied the rules. Over many years, apart from some changes to the scoring system, the rules have remained unchanged and, without having heard or read anything to the contrary, one tends to assume that this will continue to be the case.

The first indication I had that anything had changed was when I found that some stations were giving only three-figure cyphers, without the RST report. There was obvious confusion, however, as perhaps half the stations gave three-figure cyphers and half included the RS numbers. I think that, without exception, the CW operators gave six-figure reports.

However, my big blunder was in entering the now non-existent Open Section, as I have done for many years, and including phone and CW contacts in the same log. It was not until I was compiling my points score that I noticed the change in rules, and the omission of the open section.

As I pointed out in a covering letter with my log, I feel that if no points are awarded this year for entries in an open section there will be some bitterly disappointed amateurs. I also pointed out that if the rules are strictly adhered to, any amateur who gave an RS or RST report in his cypher should be disqualified on the grounds that his cypher did not contain three numbers only.

I contacted 570 stations this year, for a claimed score of 2275, and I wish to protest most strongly at the omission of the Open Section. I am not interested in competing in PHONE ONLY or in CW ONLY, as I enjoy both modes of communication and if one enters both phone AND CW sections, he cannot hope to make a comparable score in either section with an operator working a single section only.

What possible motive there can have been for omitting the open section or even changing the cypher section I am at a loss to understand, and I sincerely trust that the Contest Committee will see fit to return to the old rules next year.

Yours sincerely,

E. F. Davies VK8ED

The Editor,
Dear Sir,

I read with regret of the unfortunate accident and resulting disability of Don Pugh VK6DN (Amateur Radio September 1979, page 23). It was of great interest to me to read of the help which amateur radio provided during his time in hospital.

As previously mentioned in your journal, the Austin Hospital has had an amateur radio station, VK3ALI, since 1970. It is again active after being off the air for two years. We have also been given a CB rig, and patients are encouraged to set up their own, although they rarely do so. I have for many years been promoting amateur radio as a hobby for severely disabled people and agree with Don that it would be of great benefit. If more hospitals could be induced to having amateur radio stations I would urge any of your readers who are in any way connected with the care or treatment of disabled persons, to promote amateur radio as an ideal hobby for them.

Dr Gerald H. Ungar VK3AO,
Deputy Medical Director, Spinal Injuries Unit,
Austin Hospital.

AROUND THE TRADE

VALVES ON THE WAY OUT?

No more amateur transceivers with valves are likely to be produced, according to a director of an equipment distributor.

"Spare valves for old transceivers are becoming increasingly harder to obtain from overseas sources and many have been discontinued by the tube manufacturers. A good proportion of tubes are manufactured in Japan, mainly by Matsushita Electronics, and will be discontinued this calendar year with this company building up large inventories to supply orders for the next 3-4 years. During the peak production period, 5 million tubes rolled off the production lines every month, but this has now decreased to around 350,000 per month.

"At the moment there was no great problem in obtaining common tubes such as 6148B or 6J56C, but shortages are expected late 1990; prices may increase to cover the overhead of large inventories," he said.

While we are unable to verify the accuracy of this statement, there does seem little requirement for valves in new transceivers running up to 400W input.

Fortunately the future availability of premium quality replacement valves of types such as the 6148B looks quite good. Valves are immune to the effects of nuclear radiation unlike transistors. Several East European countries are producing many US and European valves types for military equipment. These valves may be purchased from Ammon, 69 Peter Street, Box Hill North, Victoria. Systems Reliability in South Melbourne, and CEMA also claim "hard to get" valves.

NEW LINEAR AMPLIFIER

Kenwood have announced the release of the TL-120 linear amplifier. Designed to lift the output of the TS-120V, it runs 160W in (typical) on 3.5 to 28 MHz.

Cooling is provided by a large heatsink and a thermostat controlled cooling fan. Automatic protection against high VSWR is provided. The ALC circuit is designed to reduce drive and prevent the distortion that occurs when the supply voltage falls; it also holds the power output constant if the supply rises above 14V.

Another useful feature is the peaking of the VSWR detector before the low-pass output filter. In the event of the band switch being set for the wrong frequency the PA transistors will not be damaged.

Harmonic output signals are typically 60 dB or more below the fundamental.

DX BEAM HEADING LIST

Ever wanted to know the exact beam heading from your location to any country in the world? Bintl Services have available a computerised listing which also shows long and short path headings, and the distance in miles and kilometres on the short path.

There is also a separate listing for the American States, together with all of the above information. An A1 is required to prepare a personalised listing is for you to provide your name, call sign, QTH, and longitude and latitude if known.

Cost of this comprehensive listing is £47.50 plus \$0.50 post and packing. Further enquiries to Bintl Services, PO Box 323, Cheltenham, Victoria 3192.

SWISS QUAD

GFS Electronic Imports of Mitcham, Victoria, have announced the release of some additions to the already well known range of "Swiss Quad" high performance phased quad antennas manufactured by THT, Japan, and imported/distributed in Australia by GFS.

The Swiss Quads are a "phased" type quad and offer considerable gain over antennas of similar

size. Originally designed by a Swiss Ham, HB9CV, their concept is to drive the reflector and radiator at the same time using phase differences to obtain more gain and better front-to-back ratio than conventional quads.

The Models SQ-10 and SQ-15, which have been available for some time, are for 10/11 and 15 metres respectively and have a forward gain of 12 dB and a front-to-back ratio of 20 dB.

New to this range are the SQ-61, SQ-22 and SQ-24. The SQ-61 is a single unit for six metres with a forward gain of 12 dB while the SQ-22 consists of two separate phased Swiss Quad units making an array with 15 dB gain. The new SQ-24 is an array that uses 4 Swiss Quad units and has an extremely high gain of 18 dB.

GFS expect the SQ-15 will sell for \$169, SQ-10 \$150, SQ-61 \$119, SQ-22 \$99, and SQ-24 \$219.

For complete specifications on the new Swiss Quad series contact GFS Electronic Imports, 15 McKean Road, Mitcham, Victoria 3132, phone (03) 873 3639.

NEW MFJ DUAL TUNABLE SSB/CW FILTER

GFS Electronic Imports of Mitcham, Victoria, have just announced the release in Australia of a new "Signal Enhancer", the MFJ-752 Dual Tunable Filter.



The MFJ-752 consists of two separate active filters that have both their BANDWIDTH and CENTRE FREQUENCY fully adjustable and either filter may be set up individually as PEAK, NOTCH, LOW PASS or HIGH PASS networks.

The bandwidths may be varied from 3000 Hz down to 40 Hz and using the Notch Mode, a signal may be notched to 70 dB.

A built-in switchable Noise Limiter and Trough CLIPPER are designed to remove unwanted background noise. Also a simulated stereo feature for CW lets your ears and brain reject QRM.

The MFJ-752 is easily installed. It connects to the output of a receiver or transceiver and drives a speaker with up to 2 watts from its built-in audio stage. It may be powered from a 6-18 volt DC power source.

Price of the new MFJ-752 is \$139. For more information contact GFS Electronic Imports, 15 McKean Road, Mitcham, Victoria 3132, phone (03) 873 3639.

Trio-Kenwood (Australia) Pty. Ltd. have announced the release of their new general coverage Communications Receiver, the R-1000, capable of receiving transmissions in the range of 200 kHz to 30 MHz in thirty 1 MHz tunable ranges based on the Wadley Loop design principle.



Designed for the serious short wave listener, amateur operator or beginner, the receiver offers many features, including digital display for accurate tuning, digital clock with timer, tone control, stepped attenuator for reducing strong local signals, a recording outlet and carrying handle.

Availability will be late November and cost around \$498 (sales tax included).

For further information contact S. Brucematt, Trio-Kenwood (Australia) Pty. Ltd., 30 Whiting Street, Artarmon, NSW 2064, phone (02) 438 1277.

HAMADS

- Eight lines free to all WIA members. \$9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Reports may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTH remarks address is correct as set out in the WIA 1979 Call Book.

FOR SALE

Ken KP202 2m FM, hand-held, with all extras and extra channels, \$170; Ken KP12A RF speech processor, as received in Feb. 1976 AP \$110; Asahi 5/8 2m ant. with coax and connector, \$10. VK3DM, QTHR. Ph. (03) 962 9215.

IC211 All Mode Yew, IC225 FM Tcvr, vertical hustler, 4 BTV and 16m Swiss quad. Ph. (03) 240 1231, A.H. 509 8837.

Audio Splines, 1800 ft. on 7 in. reels, brand new (no boxes), sell in lots of 20, \$45; photographic Splines, 500 watt, retail around \$9, sell for \$2.50 each sell in lots of 6 or more. Leon VK3ZK. Ph. (03) 557 6031.

ICOM 215, with CH, CO, R2, R6, R7, had little use, in orig. carton, \$160. VK2BVM, QTHR.

Sale or Exchange — Kenwood TS620B, had little use, in orig. carton, part swap with cash balance for 10 MHz CRO or sell outright, any offers? VK3BVM, QTHR.

FTDX400/401, owner's ad talk power, commercial quality AF speech processor, as used successfully by VK3JF, VK2XC, complete unit ready to use, no wiring, internal battery or external supply, off switch transfers mic to Tx input, \$52.50 p.s.i.; FTDX400, complete with mic, matching spkr, ex. VFO FV400S, speech processor, performance for DXing, \$550, plus freight. John VK3JF, QTHR. Ph. (03) 834417.

Collins KWM-2, round emblem with noise blanker, heavy duty PSU, control/speaker/wait meter, console type 3129-4, set of spare tubes, beautiful color, \$1,780; Colling TSS-3 Rx with noise blanker, 312B-3 speaker, SSB/CW/HAM filter, spare tubes, \$825; set of solid state tube testers for 755-3, \$95; microwave modules 144 MHz transceiver SSB/FM/AM/CW, 50 mW, 28 MHz, in 10W out, brand new, never used, \$150. VK2SV, QTHR. Ph. (065) 83 4414.

Uniden 2020, as new, modified Novice use, \$605, ONO. VK3NQS. Ph. (03) 781 2947 A.H.

Katsumi Mk. 1024 Pro. Electronic Keyer, as new \$150; Asahi mobile ant. system 80m-10m, incl. h/d spring and bumper mount, \$80; EA 2650 mini computer system, keyboard VBU, cassette interface, 3K RAM, games card cassette, 2550 soft ware record, manual, complete and running, \$350, ONO. VK5NJD, QTHR. Ph. (085) 34 4057.

Kenwood Comm. Rx GR-966, 170 to 410 kHz, 525 kHz to 30 MHz, SSB, AM, only 10 hours use, still with original box, shipped free to anywhere in Australia, \$150. William Scott VK4XP, QTHR. Ph. (078) 76 1253.

Trio Comm. Rx 9R-98DS, as is new cond., little used, operator's manual included, \$150, ONO. G. F. Hughes VK2ZNY, QTHR. Ph. (02) 80 3569.

Complete Station — Yaesu FT100D Rx, 80-10m, modes 400 Hz CW, USB, AM, 2 kHz AM, 4 kHz AM filters, FM stat. calibrator, WWV, plus auxiliary ranges 9.8-10.5 MHz, 12.5-13.6 MHz, 14.5-15.5 MHz, 26.5-27.8 MHz, plus FT100B matching apr. cabinet, plus Yaesu FL200B Tx, 260W PE, CW, USB/LSB, AM, with transceiver with FT100B Rx, plus Shure cer. desk stand mic, plus matching line, 120VW EIMAC 8875 final 80-10m, all patching leads, hand tools and spare valves included, all have latest serial numbers issued for FT100/FL200, professionally operated and maintained to factory specifications since new, full price \$875, ONO. VK3ADM, QTHR. Ph. (03) 267 4688 Bus., (03)592 2168 A.H.

400W PEP Galaxy V Mk III, good order, clean cond., can be heard on the air any time, with P/S, 240V ext. VFO, CW filter, DC P/S, 12V, Aztec, and some spare valves, the set \$425, ONO. Geloso TR222 Tx, all bands, including 160m (11m band modified to 160), good, clean, and in order, 65W AM, built-in P/S, 240V, good museum piece, \$75. VK4LH, QTHR. Ph. (071) 82 2675.

Mailbox 2m FM Tovar, milk and mobile bracket, 10W and 1W, rope 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 2, 4, 6, 8, simplex 40, 50, 51, 55; this rig still as new in performance, some slight marks but generally clean; a bargain at \$155 (less than the cost of the xtal's). B. Bathols VK3UV, QTHR. Ph. (03) 90 6424 A.H.

Three all 10/11m Yagi beam, H/D, sliding elements, factory made, good cond., \$58, ONO. Kevin Cocks VK3NCP, QTHR. Ph. (051) 87 1492 A.H.

Trio 9Q-402 and Trio AQ-202A Sig. Gen., with manuals, in exc. cond., cost \$290, sell for \$180, ONO. VK3VPR, Ph. (02) 626 4233 after 5 p.m. and ask for K. Blawick.

Kenwood TS-620G, CW filter, DC supply, etc., little use, as new, \$750; Icom IC-245, SSB and FM, synth. mobile/home station, \$475; Icom IC-215, 3W portable with nicads, charger, flex antenna, \$225; also FRG-7 and Icom IC-701; all must go. A. Nudley VK2BNA, Ph. (02) 230 5122/5678 Bu.

Yaesu FT7B with AC/DC supply, extra xtal filter and slider to 20 kHz, Immac. cond., \$450, ONO. W. H. Ross VK3JUT, QTHR. Ph. (059) 69 2320.

Kenwood TS7400A, \$359; Delong agile audio filter, mod. FL1, \$120; RF speech processor, Datong mod. RF/CV, \$75; above equipment as new. VK2MA, QTHR. Ph. (02) 48 5453.

KW "Victory Series II", 300W, 888 Tx, 80/10m, 240V PS and control box (all valves \$145 fitted), built in Rx mute and ant. change-over relay, VOX, MOX, CW and netting facilities, complete with xtal mic, connecting cables, circuits, block diagram, and installation, tuning and operating instructions, good cond., \$230. VK3VIR, QTHR. Ph. (03) 499 2245 A.H.

TH3JR with balun, new, never been used, still in box, \$120. VK3JUA, QTHR.

Drake SBRT Comm. Rx, 0.6 to 30 MHz, AC/DC, AM/SSB, very good cond., little use, best offer over \$175. VK1NBM, QTHR. Ph. (052) 81 6908.

Drake R4A Rx with full short wave HF band xtal, Drake noise blander, CW filters installed, Drake MS-6, spkr., owner's manuals, exc. cond., \$475; Drake TRAC SSB HF Tovar, 300W PEP input, Drake RV-4 remote VFO, Drake AC-4 power supply, Drake MN-4 ant. matching network, with owner's manuals, and new Cushcraft ATV-4, 10-40m vertical antenna, \$653. James VK2JD, Ph. (02) 38 7756 A.H., (02) 389 7786 Bu. GPO Box 5076, Sydney 2001.

Kenwood ATV200, as new, in carton, with hand box, \$125. VK2ZK/VBL, QTHR. Ph. (043) 96 4714.

Yaesu FT601 DM with SP601 speaker and YC148 desk mic, in mint cond., \$1,480; Yaesu FL2000B linear amplifier, 1.2 kW, excellent cond., \$460; Kenwood TS820, as new, excellent cond., \$1,000, ONO. VK3BIB, QTHR. Ph. (055) 63 5953 Bu.

100 ft. Free Standing Tower, urgent sale, \$575, ONO; ex txd use, will fit in a tandem trailer, already dismantled; Eddystone 750 Rx, 500 kHz-32 MHz, double conversion, unmodified, i.e. stock standard cond., \$150. G. Scott VK3ZK, QTHR. Ph. (02) 98 4645.

Hewlett Packard 870A Digital Multimeter with accessories and charger, \$220; Q80 1956 to 1968 inclusive, \$5 per year. VK3MD, QTHR. Ph. (069) 339 204.

666 Rectifiers, new in carton, \$8 each, plus postage. VK4SS, QTHR.

Kenwood T6620B, complete with digital readout, hand mic, SP520 speaker, modified for Novice power by distributor, \$795. VK3NDI, QTHR. Ph. (03) 786 1260.

Katsumi KM22/EK-127 Electronic Keyer, \$20; Hydrax VS22 15/10 trapped yagi, \$145; "TenTec" 544 transceiver, \$1,150; items offered are as new, bought by my son who unfortunately never made the licence exam; some other items of amateur equipment, to complete my own station, would be considered in a part exchange agreement. Ralph VK5NRD, QTHR. Ph. (05) 46 6260.

WANTED

Command or similar VVWZ Rxs or components, particularly tuning gangs or coil boxes for student projects. Offers, prices, etc., to VK3RG, QTHR.

Smoothing capacitors for power supply, 2.5/3 kV rating, 4 uF or greater. VK8SU1, QTHR.

FT237R 2m Tovar in good cond.. Advice price and cost. J. Foster VK4CDX, PO Box 125, Mary Kathleen 4627, or Ph. (077) 47 222 Bu., 47 2180 A.H.

External VFO Type 4010 to suit Uniden 2020 transceiver. Price and particulars to VK5WV, QTHR. Ph. (08) 352 2051.

RF Sig. Gen., Marconi TF855 or similar, must have AM/FM modulation capability and calibrated output level down to 1 uV. W. Pickering VK4WP, 10 Marina Pde., Ingham 4850, Q. Ph. (077) 76 2008 A.H., (077) 76 2110 Bu.

Swan 410C or 420 External VFO, VK3AVT, QTHR. Ph. (02) 57 4325.

Yaesu FTV650 6m Transverter or similar. Price and details to Gary Hambling VK5AS, QTHR. Ph. (086) 82 2809 or Cowell 144 A.H.

Power Transformer, to give 1000V each side of centre-tap with at least 400 mA and not to have a greater height than 15 cm. VK3ACD, QTHR. Ph. (056) 21 2484.

Manual/Circuit Diagram or similar information on **Teletype Model 15**, will purchase outright or copy and return promptly. T. Robinson L3101, QTHR.

FR167/16A Circuit Diagram and any other information to buy or photocopy: Teletypewriter in working order, for \$50 to \$90. Phillip Rie VK3BHR, QTHR. Ph. (054) 33 2204 A.H., (054) 43 1877 Bu.

TRADE HAMADS

QSL Cards, Log Books, Contest Sheets — send 20c stamp for samples and prices to Linda Luther VK4VY, PO Box 498, Nambour, Qld. 4560.

OBITUARY

DON BORAGHAN VK3PU

It is with regret that we record the passing of Don VK3PU on August 10th, 1978; just the day before his 77th birthday.

Don was born in 1902 in Ireland and joined the Marconi Institute of Radio in Dublin. After graduating he joined the Marine section of Marconi Co. until joining AWA in 1921.

Travelling the seven seas, Don visited every port during the following 10 years of service in the Merchant Marine and was the Operator on board the first vessel equipped with radio voice of the equator.

In 1932 Don joined the Department of Civil Aviation and was with them until his retirement in 1962, attaining the post of Senior Communications Officer in Charge at the flying boat base in Rose Bay and later at Mascot Airport.

Although ill-health forced him to lead a limited life physically, he obtained the VK3 2m DX record in January of this year by working ZL3BFC, an event that Don had hoped many years for.

Apart from being the first person to send a Telex from Sydney to the USA, he was one of very few VKs to work Hawaii and Tokyo via Oscar 7 Mode B. Another of his favourite subjects was the true Amateur spirit of experimenting (3 Ringers in phase?).

Don was a very active Amateur and his passing leaves a large gap, not only by his cheerful "Guardian of the repeater on the gateway to the Gold Coast", but also in the ranks of Nature's gentlemen, and especially from within the Gold Coast Radio Club, of which Don was an Honorary Life Member.

Martin Williams VK4ZIL.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. L. A. McPHERSON VK3AMK
Mr. I. BAILLIE VK3TM
Mr. A. K. MAYNARD VK3AG
ROBIN CLARK VK4CL (ex VK3BCL)

OBITUARY

PETER NORMAN VK5NPN

It was with deep regret that members of the South-East Radio Group learned of the tragic death of Peter (aged 23) and his XYL (of only eight weeks), Gail (aged 19), on June 15th, 1978. Result of car accident.

Peter had been an enthusiastic SWL before being licensed in 1976 and was one of the early novice stations to be heard on air. He was very active on 80, 15 and 10 metres and was frequently heard mobile and portable. Peter had applied to sit for the August 1978 ACP. He was an example to Amateur Radio, enthusiastic about construction and experimenting.

Peter had a bright and cheerful approach to everyone and everything and will be sadly missed by all his amateur friends. To the families of Peter and Gail, amateurs extend their deepest sympathy.

T. R. Hutchesson VK5TH.

TRADE HAMADS

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamade-Trade" section. The rate will be \$10 for 4 lines plus \$2 per line (or part thereof), minimum charge \$10, pre-payable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

ADVERTISERS' INDEX

AMATEUR ELECTRONIC IMPORTS	26
AMATEUR RADIO ACTION	41
BAIL ELECTRONICS	19
BRIGHT STAR CRYSTALS	7
CHIRNSIDE ELECTRONICS	20
CUSTOM COMMUNICATIONS	43
CW ELECTRONICS	28
DELTA COMMUNICATIONS	44
DICK SMITH ELECTRONICS	2
GRAHAM STALLARD	41
GFS ELECTRONICS	40
HAM RADIO SUPPLIERS	5
IMARK	28
J. VAILE	7
PHILIPS	61
QTH EXCHANGE SERVICES	24
SIDEBOARD ELECTRONIC SALES	29
SIDEBOARD ELECTRONIC IMPORTS	32
TRO-KENWOOD	52
SCALAR	6
VICOM	26, 27, 31, 42
WIA NSW DIVISION	17
WIA TAS. DIVISION	17
WILLIAM WILLIS	5

NOW THE FM321

70cm amateur rig



40 channels fully
synthesised
Australian designed & made

for only

\$299*

Check these features:

- 40 synthesized channels with electronic channel change and LED readout.
- Channel selection up or down from front panel or hand microphone.
- A LED each for power on, transmit and receive.
- 5 Watts RF and 1 Watt audio power.
- Combined signal strength and RF power meter.
- Single or two frequency simplex operation on any of the 40 channels.
- Instant selection of these modes plus any one nominated repeater channel.
- 5MHz Tx/Rx separation on repeater mode.
- PL259 antenna socket.
- 6 pole crystal filter combination for improved selectivity.
- High sensitivity

SPECIFICATION: TYPICAL DATA AT 22°C 13-8V
Frequency Range: Tx 433.025MHz to 434.000MHz &
438.025MHz to 439.000MHz
Rx 438.025MHz to 439.000MHz

Frequency Stability: Better than 6ppm 0°C to +60°C

Supply Voltage: 11 to 16.2 Volts -Ve earth.

TRANSMITTER

Power Output: 5 watts

Spurious Outputs: -63dB (out of band)

Audio Response: 6dB/octave pre-emphasis

300Hz to 2KHz.

RECEIVER

Audio Output: >1.0 Watt at 10% THD into 8Ω

Selectivity: >50dB at ±25KHz

Sensitivity: 0.3μVpd (12dB SINAD)

Please send me an FM321
by registered mail.

To: Philips-TMC (Radio Division)
P.O. Box 105,
CLAYTON, Victoria. 3168.

Name Address

..... State Postcode

Call Sign

Cheque Nil/Money Order No. Is enclosed for

\$

or

Please debit my Bankcard No.

Expiry Date

For \$ Signature

* Add \$4.00 for packing and postage.



PHILIPS





KENWOOD

TR-2400 TRANSCEIVER WITH ADVANCED MICRO-PROCESSOR CONTROL



CONVENIENT
TOP
CONTROLS



SYNTHESIZED — BIG LCDs — 10 MEMORIES — SCANNING. LIGHT YEARS AHEAD OF THE OTHERS!

The TR-2400 is a highly advanced 2 metre synthesized hand-held unit with a large range of superior features. Big LCD digital readout, which you can read in the sunlight and in the dark with the lampswitch. Keyboard frequency selection from 144.000 to 147.995 MHz and up/down manual scan from 144.000 to 147.995 MHz, all in 5-kHz steps. Has 10 memories and automatic memory scan. Simplex and repeater operation. First hand-held to have Reverse mode momentary switch. Built-in Touch-Tone generator using 16-button keyboard. LCD "arrow" indicators. Subtone switch, BNC antenna connector and 2 lock switches to prevent accidental frequency change and accidental transmission.



TL-120 HF LINEAR AMPLIFIER

80-10 METER/200 PEP INPUT

The compact desk top TL-120 has medium range power capability designed to match the TS-120V HF transceiver. Has a high efficiency final heatsink with a built-in cooling fan and a complete protection system.

500 FREE QSL CARDS WITH EVERY TS-520S
SOLD BEFORE END NOVEMBER FROM AUTHORISED KENWOOD DEALERS



The TS-520S with its companion VFO-520S, SP-520 and AT-200. The TS-520S is the final word in SSB transceivers... the "hottest little rig on the air". Built in AC power supply, compact and extremely reliable. The TS-520S is loaded with features... loaded with Kenwood quality.

TRIO-KENWOOD (AUSTRALIA) PTY. LTD.

31 Whiting Street, Artarmon, Sydney, N.S.W. 2064. Telephone (02) 438-1277

Authorised Distributors:

N.S.W.: SIDE BAND ELECTRONICS SALES (02) 438-4191 • CUSTOM COMMUNICATIONS (02) 635-6399
SIDE BAND ELECTRONICS IMPORTS (047) 51 1394 • EMTRONICS (02) 398-6378 •
VIC.: VICOM IMPORTS PTY. LTD. (03) 699-6700 • **QLD.:** MITCHELL RADIO CO. (07) 57-6830 •
S.A. & N.T.: INTERNATIONAL COMMUNICATIONS SYSTEMS PTY. LTD. (08) 47-3688 •
W.A.: WILLIS TRADING CO. (09) 321 7600 • **TAS.:** ADVANCE ELECTRONICS (003) 31-5688 •

PLUS MANY OTHER REGIONAL OUTLETS THROUGHOUT AUSTRALIA

Call into
your nearest
authorised
distributor
and ask to see
these and other
high performance
Kenwood units